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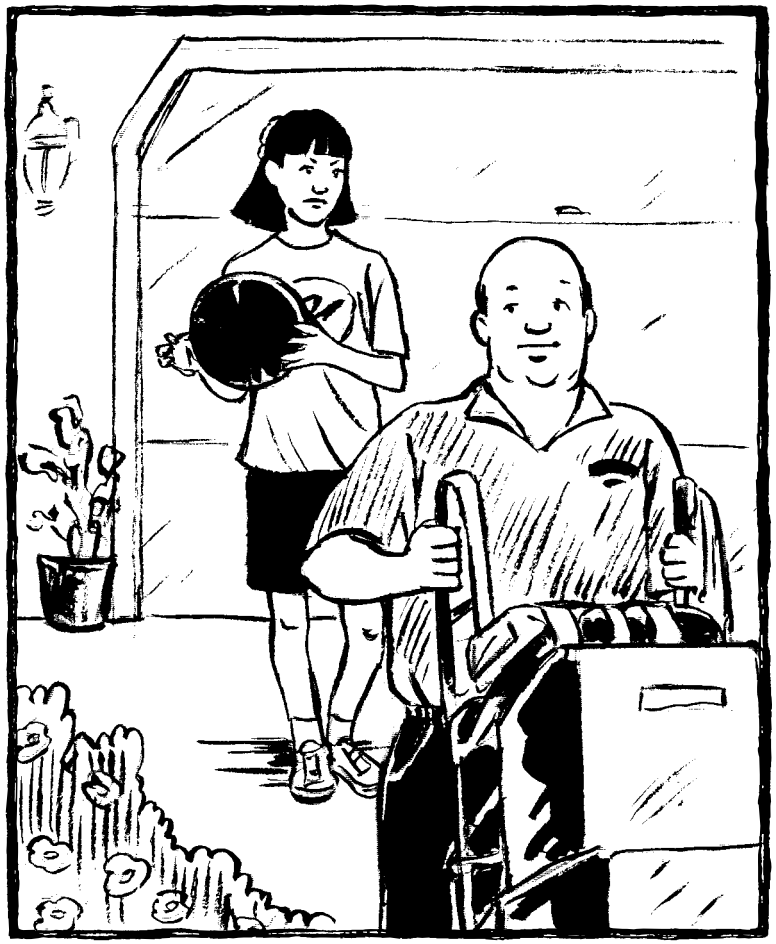
The Outburst

A Reading A–Z Level V Benchmark Book
Word Count: 1,018



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BENCHMARK • V

THE OUTBURST

Written by Alyse Sweeney
Illustrated by Linda Pierce

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Level V Benchmark Book
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Correlation

LEVEL V	
Fountas & Pinnell	R
Reading Recovery	25
DRA	40

Grandma and I are similar in so many ways it's no wonder we are so close, like two peas in a pod. We are crazy about karaoke, concerned about the environment, serious chess players, and passionate writers. Grandma writes a famous mystery series starring her five grandchildren—I'm the lead detective—while I prefer to write poetry. Like all passionate writers, we share a love of words that led us to the habit of taping words to our bathroom mirrors—famous quotes for Grandma and favorite words for me.

That's why I never felt as horrid as the day I thought I ruined everything, like a wave crashing a breathtaking sandcastle.

It was moving day and Mom, Dad, and Grandma eagerly directed movers inside our antebellum North Carolina home. But my stomach was a knot and I needed air.

Boing . . . boing . . . boing . . . . It felt good to whack the basketball against the garage door—at least that hadn't changed from Pennsylvania to North Carolina. I tried to whack away the cloud of anxiety that had been hovering over me since I learned of the move last month—on the last day of school, actually. That's when Dad giddily broke the news about his fabulous new job about a million miles from friends and relatives. Life as I knew it was over, wrecked, finished, ruined.

"Please stop, *niña*," Mom called from the kitchen window. "You'll leave marks on the garage."

Boing . . . boing . . . boing . . . . I knew Dad despised his old job, but was it really that terrible and was it necessary to leave the state to find a better one?! Did he even try to look for new employment in Pennsylvania?

"Hey, Sammy, your mother asked you to stop the banging, *por favor*," Dad called, trying his best to mimic Mom's Spanish accent.

Boing . . . boing . . . boing . . . . But throughout the past month, I had never seen Dad so deliriously happy—humming, talking a mile a minute, and tickling Mom. His bliss means my misery and that is so unfair I could scream!

Boing . . . boing . . . "Hey, watch it!" bellowed a mover, rubbing his head where the ball struck.

Grandma must have sensed my irritation, so she invited me to explore the trail behind our house, rescuing me from angry glares. "So how's it going, Sam?"

"It's going horribly, hideously, and horrifyingly awful! Look at my hair—I'm a complete frizz ball—and this place is like a giant steam room!"

"We'll get used to it," said Grandma. "I do love how green and lush it is, though. Aristotle hit the nail on the head when he said, 'In all things of nature there is something of the marvelous.'"

"Well, there's nothing marvelous about moving here. Do you realize I should be swimming with Kate and Jordan right now! I wonder how long it will take before they forget all about me."

"I know it's difficult, Sammy, but you'll make new friends."

"How?" I screamed as my blood boiled. "Everyone here already has their friends. They don't need an outsider nosing in and screwing up their relationships." Angry tears blurred my vision and my heart pounded like hail on a roof.

"Benjamin Franklin said, 'Do not anticipate trouble, or worry about what may never happen. Keep in the sunlight.'"

That's when I exploded like a firecracker.

"*¡Cállate!* Shut up!" I wailed. "Your stupid quotes aren't helping!"

The ugly words hung in the steamy air for several long moments. I dreaded looking Grandma in the eye, and when I did, her eyes, appearing both concerned and stern, spoke volumes without her having to utter the words they intended to convey—don't ever speak to me that way again.

Then her mouth opened. "Samantha," she spoke slowly and softly, "when Grandpa died, I was full of rage, and you know how I coped? I furiously wrote in my journal. Perhaps you can write poems about your feelings, and maybe that will keep your family from becoming human punching bags."

I watched her walk down the trail, feeling more miserable and ashamed than I ever thought possible. *What was the matter with me?* Grandma's positive outlook and love of quotes are two of her most incredible qualities—they make her uniquely Grandma.

Back at the house, I unpacked my bedroom as quick as lightning. Luckily, everyone in the house was busy all day unpacking and arranging his or her own living space, leaving me uninterrupted time to think—and to write.

I scrawled in my journal all the crummy aspects of the move. I made lists of all the people, places, and things I'd miss—my Cuban cousins, my favorite soul food restaurant, and the secret hideaway in my old backyard where I could write in my journal undisturbed. I wrote a poem about my fright over not being good at making new friends. Once again, Grandma showed me her wisdom, and the anger and anxiety were safe inside my journal and almost entirely out of my head. All I wanted to do next was make up with Grandma for my horrible behavior. After serious brainstorming, I decided my apology would be a celebration of her, as well as her love of quotes. I went online using my newly hooked-up computer and a search engine to find quotes featuring grandmothers, and then I made a collage using different colored paper, paints, stickers, and glitter.

Before she looked at my hand-made card, Grandma whirled around her room, showing me her furniture arrangement and the bird's nest outside her window in the longleaf pine. Then she plopped on the bed and beamed as she read aloud, "Grandmas are moms with lots of frosting, author unknown; A Grandmother is a little bit parent, a little bit teacher, and a little bit best friend, by G.W. Curtis; and If nothing is going well, call your grandmother, an Italian proverb."

She hugged me tightly, told me "apology accepted," and then said she loved me more than caramel-covered flan. Then she whispered in my ear, "John Wayne said, 'Courage is being scared to death—but saddling up anyway.' So saddle up Sammy!"

And I did. She helped me find the strength to be brave.

Reading a-z Running Record

Level V

The Outburst
169 words

Student's Name _____ Date _____

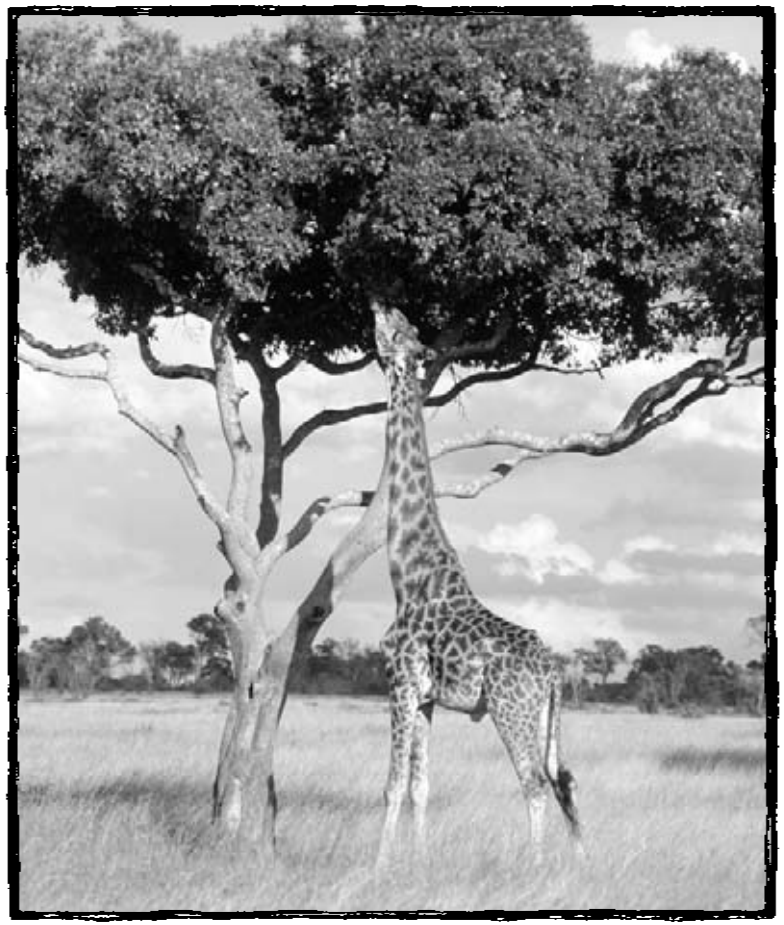
Have the student read out loud as you record. Assessed by _____

page	**E** = errors **S-C** = self-correction **M** = meaning **S** = structure **V** = visual	E	S-C	E M S V	S-C M S V
3	Grandma and I are similar in so many ways it's no wonder we are so close, like two peas in a pod. We are crazy about karaoke, concerned about the environment, serious chess players, and passionate writers. Grandma writes a famous mystery series starring her five grandchildren—I'm the lead detective—while I prefer to write poetry. Like all passionate writers, we share a love of words that led us to the habit of taping words to our bathroom mirrors—famous quotes for Grandma and favorite words for me. That's why I never felt as horrid as the day I thought I ruined everything, like a wave crashing a breathtaking sandcastle.				
4	It was moving day and Mom, Dad, and Grandma eagerly directed movers inside our antebellum North Carolina home. But my stomach was a knot and I needed air. Boing . . . boing . . . boing . . . . It felt good to whack the basketball against the garage door—at least that hadn't changed from Pennsylvania to North Carolina.				
	Totals				

Accuracy Rate: _____ **Error Rate:** _____ **Self-correction Rate:** _____

Hoofed Animals

A Reading A–Z Level V Benchmark Book
Word Count: 1,342



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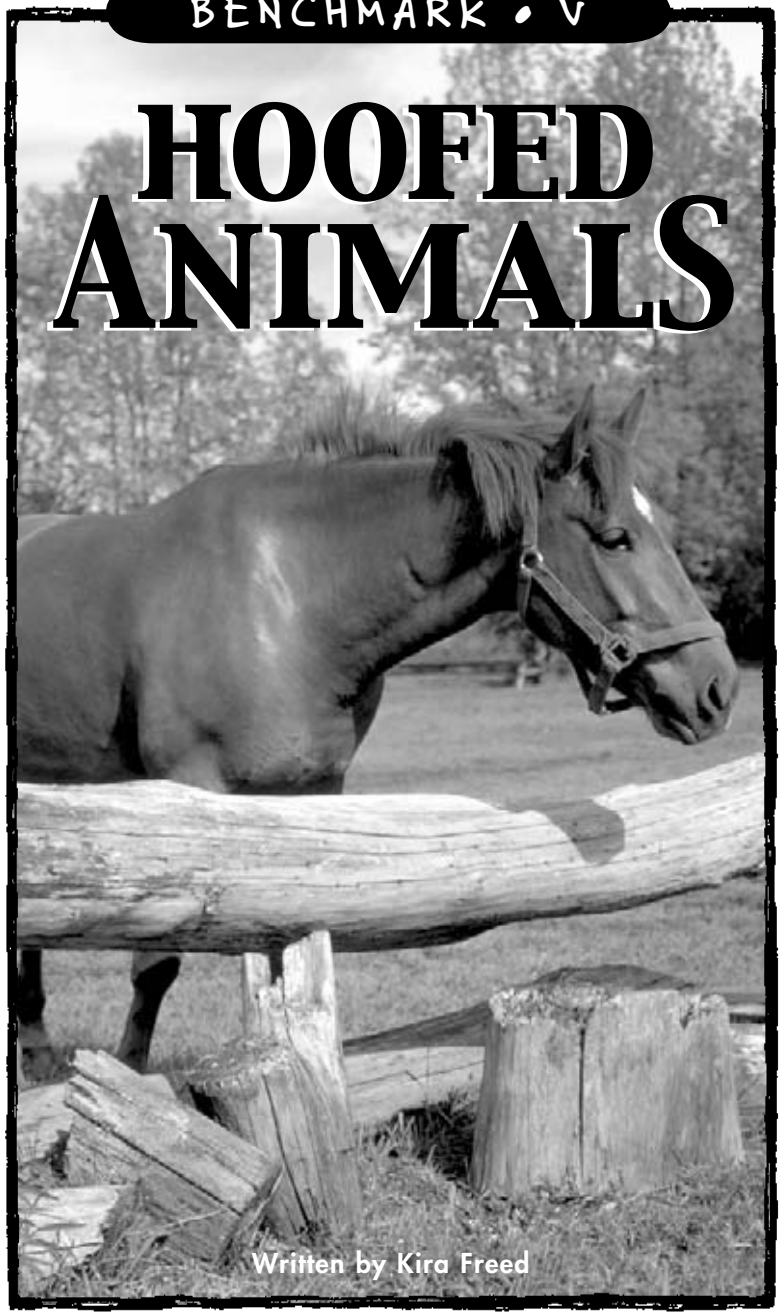
HOOFED ANIMALS



Written by Kira Freed

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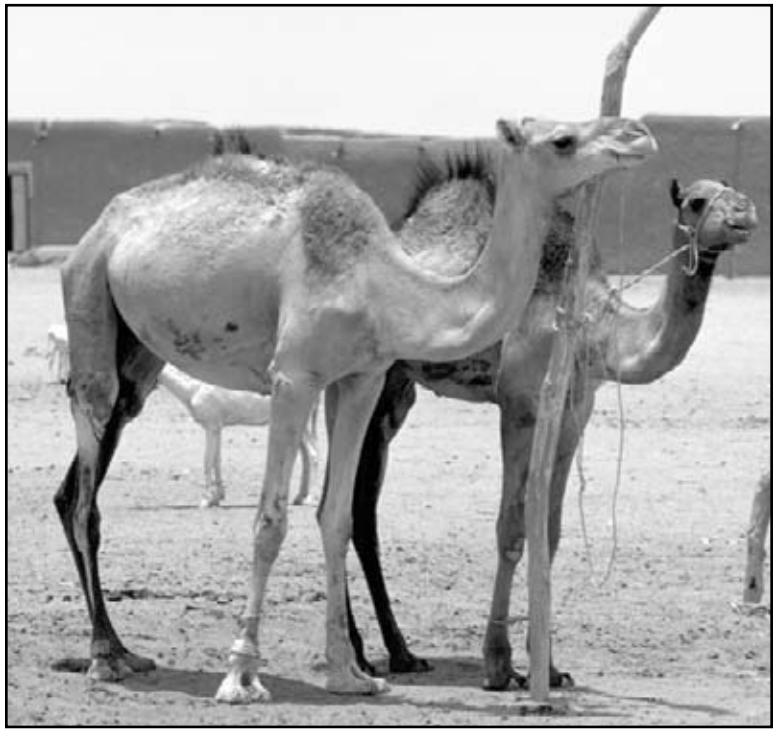
HOOFED ANIMALS



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Correlation

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Fountas & Pinnell	R
Reading Recovery	25
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What Are Hoofed Animals?

A gazelle

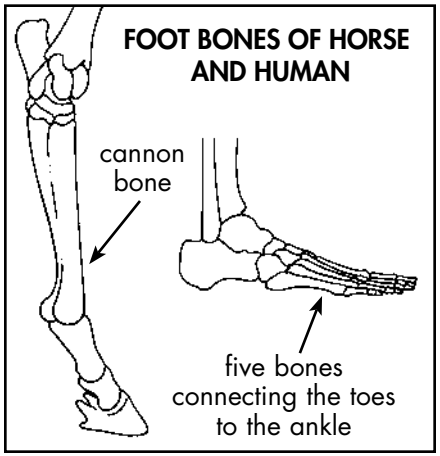
Hoofed animals are among the most graceful creatures on Earth. Large, powerful, and designed for speed, they are beautiful and fascinating. In addition to admiring them in the wild, humans have visited them in zoos, hunted them, and kept them as sources of milk, meat, wool, labor, transportation, and companionship.

Hoofed animals all belong to a group of mammals called **ungulates** (UN-gyu-luts). All modern ungulates are related to an extinct group of hoofed mammals that lived 65 million years ago. Ungulates have hooves made of a material called **keratin** covering their toes. Hooves are like giant toenails that serve as protection for their feet.

Horses have worked for humans for thousands of years.

Most hoofed animals are **herbivores** (plant eaters), and many of them are food for **carnivores** (meat eaters). One of their primary challenges in life is to flee fast enough to avoid being killed by predators such as humans, lions, wolves, and hyenas. Because they need to run, hoofed animals have long, strong legs and feet.

Hoofed animals' skeletons are specially shaped to help them run quickly. A human foot has five separate bones connecting the toes to the ankle, but many hoofed animals instead have one long, solid bone connecting the toes (hoof) to the ankle. This solid bone, called a **cannon bone**, makes hoofed animals' legs longer to help them run farther and faster. The cannon bones also make hoofed animals' legs more solid and stable to better support their weight.



Scientists place hoofed animals into two different groups based on whether the animals walk on an odd or even number of toes. We'll look at these two groups separately, including some well known members of each group.

Rhino

Horse

Zebra

Donkey

Odd-Toed Ungulates

Odd-toed ungulates include rhinoceroses, horses, zebras, donkeys, and several other animals. Rhinos have three toes on each foot, while the horse-like ungulates have just one toe (their hoof) on each foot.

These animals primarily inhabit warm environments around the world. They live in a variety of habitats, including forests, grasslands, and deserts. The food they eat—grasses and other plants—is difficult to digest, and their stomachs require the assistance of tiny bacteria to break down their food.

Horses—The only truly wild horses alive today inhabit the dry grasslands of Eurasia. The "wild" horses living in North and South America and Australia

actually are **domestic** breeds that have escaped human control and grown wild. Horses can survive in environments with little food and water, but they must spend most of their time grazing to take in enough grass—and nutrients—to survive.

Before machinery became commonplace, horses pulled wagons and plowed fields. In modern times, horse lovers keep them for companionship, riding, and racing.

Racehorses thrill us with their speed.

Zebras—All wild zebras live in Africa, and they primarily eat tall grasses. Aside from their famous stripes, zebras are similar to horses in appearance. The main enemies of zebras are lions, hyenas, and wild dogs, as well as humans who hunt them for their skins. There are three main kinds of zebras: plains, desert, and mountain zebras. The Cape mountain zebra is severely endangered; only 1,200 exist worldwide.

Do You Know?

A zebra's bold black-and-white stripes are a form of camouflage. The stripes help it to blend in with other zebras, especially when the entire herd is running. By blending in, a zebra is less likely to be singled out by a predator.

A zebra's stripes are as unique as human fingerprints. No two zebras' stripes are alike!

Rhinos are rare and unusual.

Rhinoceroses—The rhino, which is native to parts of Africa and Asia, is another ungulate that is seriously endangered. Few rhinos are still alive in the wild; most now live on protected land, including national parks and nature preserves. Rhinos live on plains and in forested and swampy areas, where they consume grasses, leaves, and other plants.

Rhinos are the second largest land mammals after elephants. Rhinos are easy to recognize by the horns on their noses, their large heads, and their massive bodies covered with dark, leathery skin. Rhino horns are made of keratin, the same material as hooves. Some kinds of rhinos have one horn, while other kinds have two.

Camel

Hippo

Even-Toed Ungulates

Even-toed ungulates are a large group of animals that includes deer, cattle, sheep, goats, antelope, camels, hippos, and giraffes. Some even-toed ungulates, such as camels, have only two toes on each foot, while others, such as hippos, have four toes on each foot.

Even-toed ungulates, one of the most numerous groups of mammals on Earth, are native to every continent except Australia and Antarctica. They are what scientists call "**successful**" animals, meaning they have reproduced, spread out, and adapted to a wide variety of environments.

Pigs and hogs, called swine, are intelligent **omnivores** (eating both plants and animals) with round, stocky bodies, long heads with a flexible snout, and tusks that point up. They have four toes on each foot, with the middle two being the largest. Swine originally lived in the wild in Europe, Asia, and northern Africa. They

Warthog

are now raised throughout the world as a food animal and are hunted in the wild.

Giraffes are inhabitants of African grasslands that have permanent short, bony horns covered by furry skin that is never shed. Giraffes are famous for their unusually long necks, their pattern of spots, and their long, blue-gray tongues. Male giraffes compete with each other for dominance by wrestling with their necks and hammering each other with their heads.

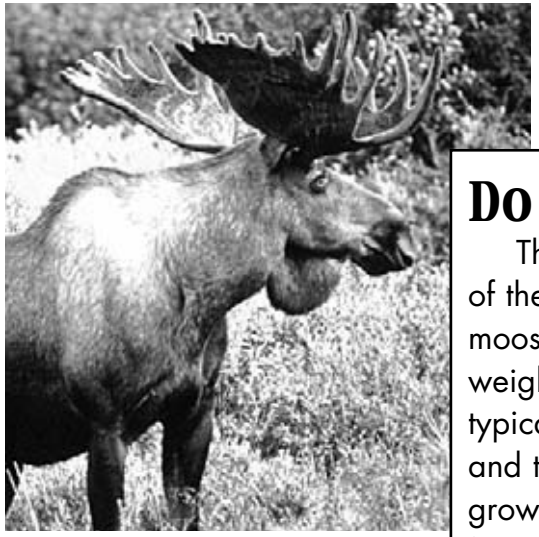
Hippos are large, heavy African animals that spend most of their time in water. They don't really swim, but instead walk on the bottoms of lakes and rivers. They have slightly webbed feet with four toes, and huge teeth that point up. Their herbivorous diet consists of grasses, leaves, fallen fruit, and other plants, most of which grow under water.

Do You Know?

An adult hippo can eat up to 136 kilograms (300 lbs) of plants in a single day! That's like you eating more than 1,200 veggie burgers a day.

Camels are large herbivorous animals that have long curved necks, one or two humps on their backs, and two toes on each foot. One-humped camels live in deserts in the Middle East, India, and North Africa, while two-humped camels live in deserts and windy grasslands in central Asia. Both kinds of camels are well suited to habitats where food and water are scarce. Camels store fat in their humps, which helps them to survive when they must endure long periods of time without food. Few camels still exist in the wild; most are kept as pack animals, and one-humped camels are also used for riding.

Pronghorn antelopes are herbivores that inhabit the grasslands of North America. Males and females both have permanent, one-spiked, or pronged, horns made of bone and covered by a layer of **fused** hairs, which is shed each year. Pronghorns are extremely fast, and healthy adults can easily outrun predators. The most serious threat to pronghorn survival occurs in the first two months of life, when coyotes kill fawns in large numbers.



Do You Know?

The largest member of the deer family is the moose. Its antlers can weigh as much as a typical 11-year-old child, and those antlers can grow up to 25 millimeters (1 inch) a day!

Deer, including elk, moose, and caribou, are herbivores. Some are **grazers** (eating mostly grass), but most are **browsers** (eating leaves, shoots, twigs, and other plant parts). Deer are found in many habitats around the world, including grasslands, forests, rainforests, and tundra. Many deer migrate with the changing seasons to locate food.

Most male deer grow antlers, which are made of bone and covered in furry skin called velvet while they are growing. Antlers grow before the mating season, fall off after it, and grow again the following year. Caribou are the only kind of deer in which the females have antlers.

Horns come in many shapes and sizes. Clockwise, from top left: Texas longhorn steer, bighorn sheep, kudu antelope, goats

Cattle, sheep, goats, and antelopes vary widely in shape and coloring; however, they all share the feature of growing permanent horns made of bone and covered with a layer of keratin. All the males of this group and some females have horns; each horn is always a single spike. The horns can be simple, curved, or spiral in shape, and antelopes often have horns that are elaborately shaped. Many domestic animals in this group are kept for milk, meat, and wool.

Conclusion

Ungulates are diverse creatures, each with a unique body and lifestyle that make it perfectly suited to the habitat in which it lives. Many ungulates, such as swine, sheep, and cattle, are raised in great numbers for food, milk, and hides. But many wild ungulates, such as the rhino, are endangered and survive only in captivity. Others are at risk of suffering the same fate because of environmental destruction, hunting, and other threats to their well-being. Habitat preservation and respect for life will allow these amazing animals to continue to survive into the future.

Wild horses running free: a sight that is becoming rare.

Glossary

browsers *(n.)*	animals that eat leaves, shoots, twigs, and other plant parts (p. 13)
cannon bone *(n.)*	the long, single foot bone found in hoofed animals (p. 5)
carnivores *(n.)*	animals that eat other animals (p. 5)
domestic *(adj.)*	animals that live with and are dependent upon humans (p. 7)
fused *(adj.)*	squashed together to make one solid form (p. 12)
grazers *(n.)*	animals that eat grass and other ground-growing plants (p. 13)
herbivores *(n.)*	animals that eat plants (p. 5)
keratin *(n.)*	a hard material that makes up horns, hooves, and fingernails (p. 4)
omnivores *(n.)*	animals that eat both plants and other animals (p. 10)
successful *(adj.)*	turning out well; accomplishing a goal (p. 10)
ungulates *(n.)*	a group of herbivores that includes hoofed animals (p. 4)

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Reading a-z Running Record

Level V

Hoofed Animals
108 words

Student's Name _____ Date _____

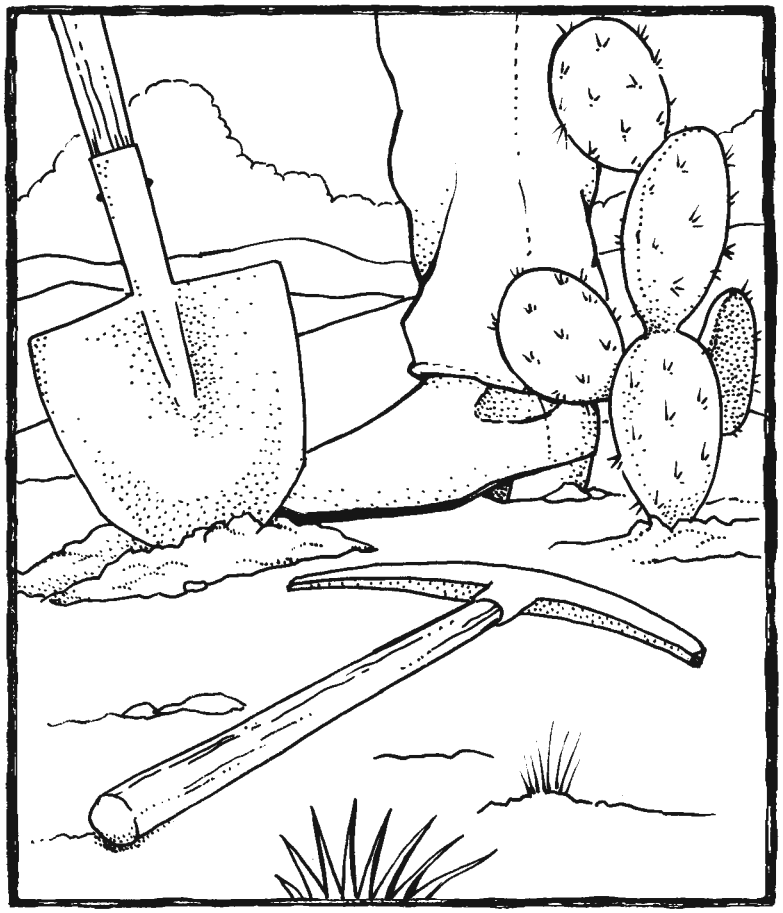
Have the student read out loud as you record. Assessed by _____

page	**E** = errors **S-C** = self-correction **M** = meaning **S** = structure **V** = visual	E	S-C	E M S V	S-C M S V
4	What Are Hoofed Animals? Hoofed animals are among the most graceful creatures on Earth. Large, powerful, and designed for speed, they are beautiful and fascinating. In addition to admiring them in the wild, humans have visited them in zoos, hunted them, and kept them as sources of milk, meat, wool, labor, transportation, and companionship. Hoofed animals all belong to a group of mammals called ungulates (UN-gyu-luts). All modern ungulates are related to an extinct group of hoofed mammals that lived 65 million years ago. Ungulates have hooves made of a material called keratin covering their toes. Hooves are like giant toenails that serve as protection for their feet.				
	Totals				

Accuracy Rate: _____ **Error Rate:** _____ **Self-correction Rate:** _____

The Lost Dutchman

A Reading A–Z Level V Leveled Reader
Word Count: 3,776



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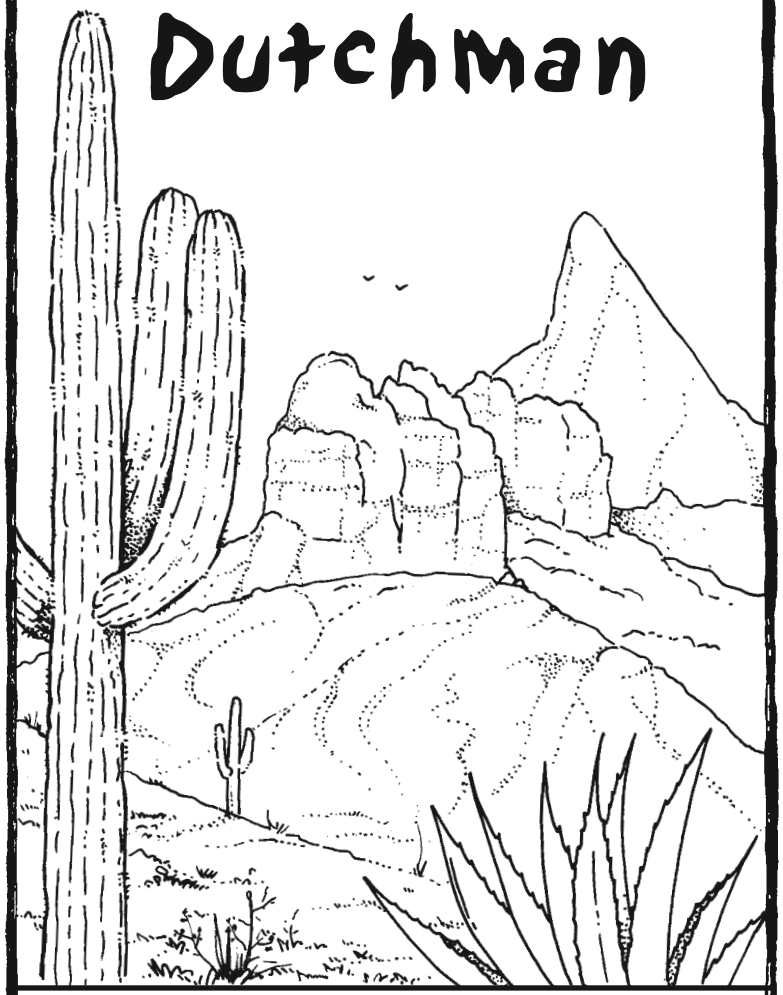
The Lost Dutchman



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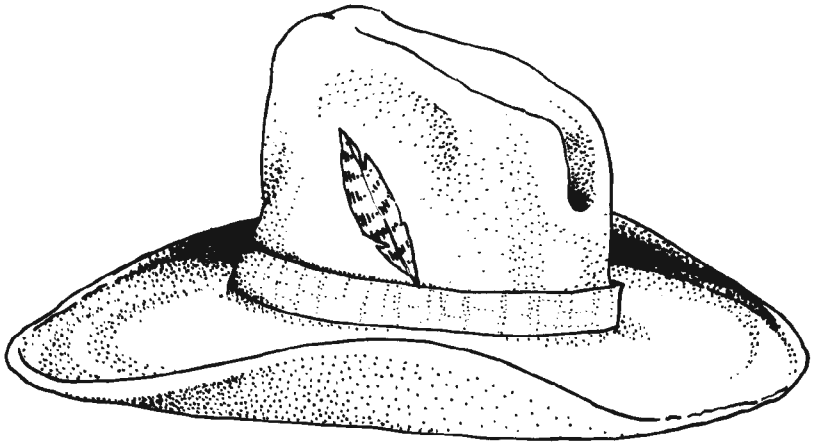
The Lost Dutchman



Written by David Meissner
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Correlation

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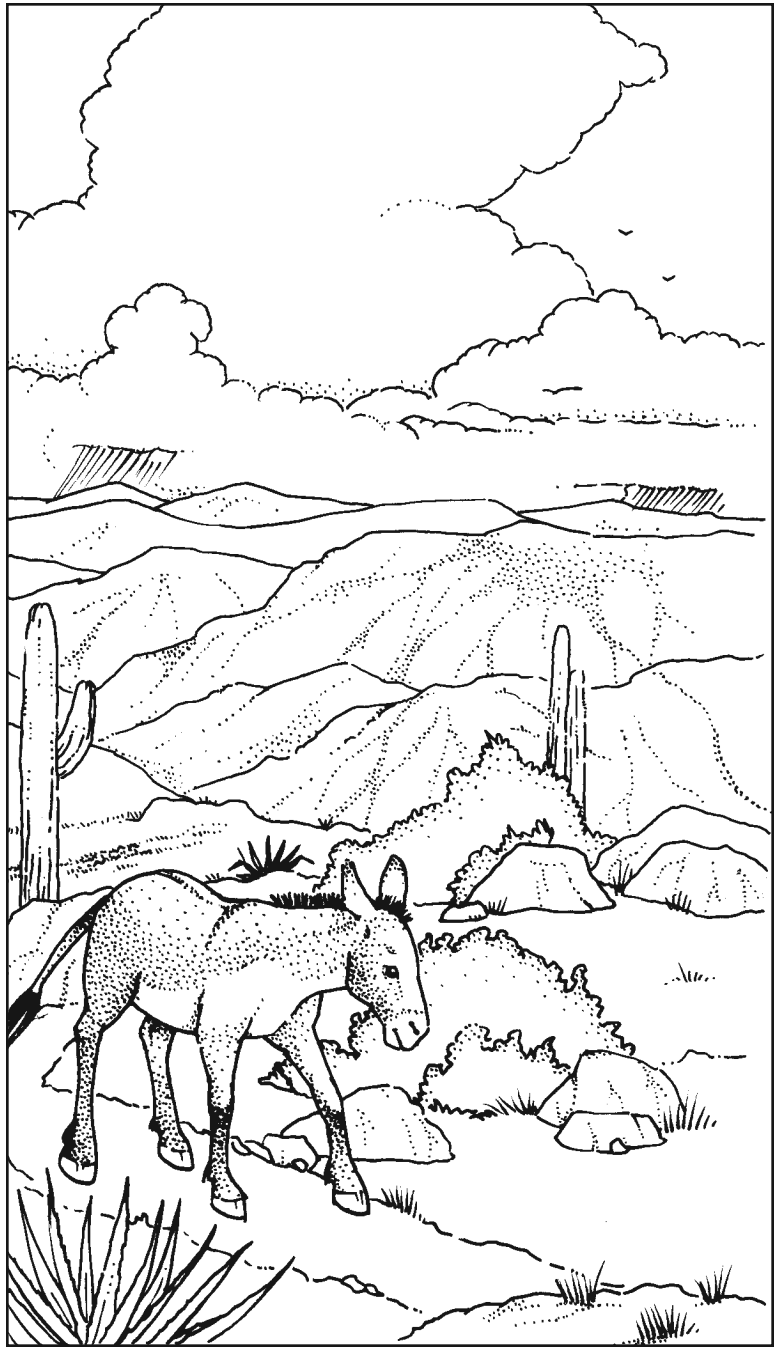
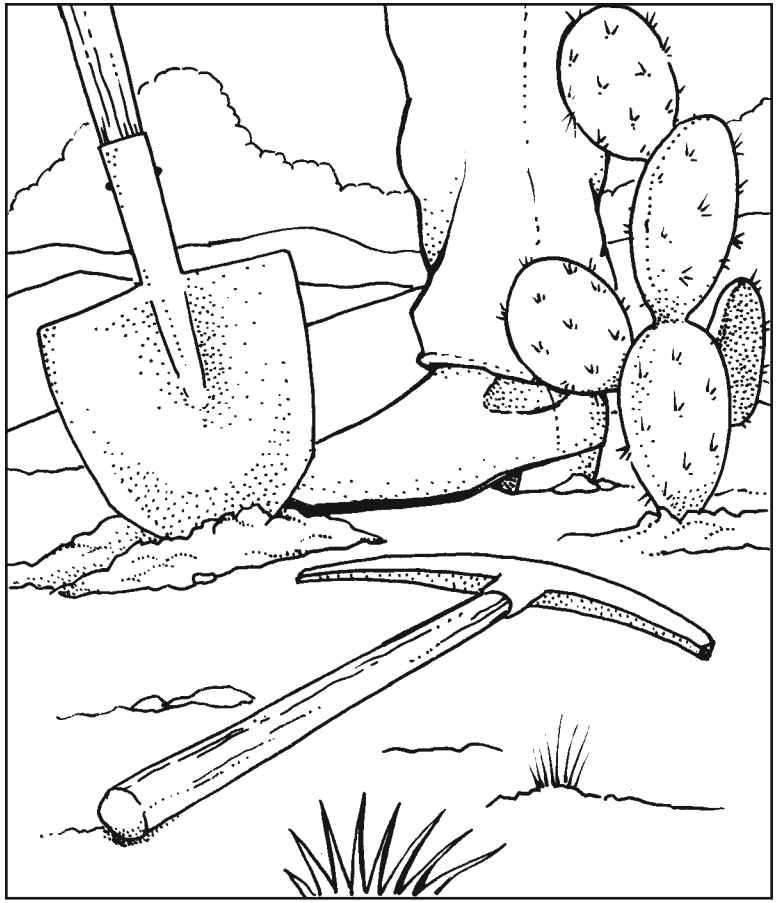




CHAPTER 1: *The Legend*

The class began just like any other. Mr. Martinez collected homework from his fourth grade students. He asked them questions about their assigned readings. Then he talked about the next topic in Arizona history: the gold rush of the 1800s. **Prospectors** came to the desert hoping to find gold and silver in the mountains.

"One legend in particular has captured the imaginations of Arizonans, even to this day," Mr. Martinez said. "This is the story of the Lost Dutchman's Gold Mine. You see, in 1868, a farmer moved to Phoenix. He had dreams of striking it rich. One day, he decided to trade in his farming tools for picks and shovels. He and his **burro** used to disappear for days at a time into the Superstition Mountains. These mountains are still just outside of our city."

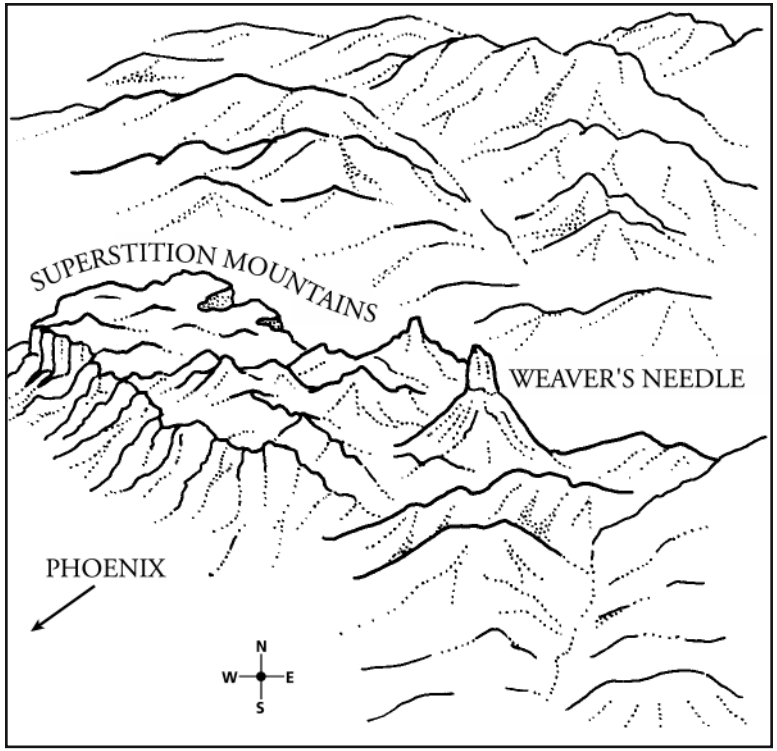
Mr. Martinez pointed to the map on the wall. "Here in these canyons, this man was rumored to have found gold. Every so often, he **emerged** from the mountains with big chunks of solid gold. People tried to follow him, but he always gave them the slip. His name was Jacob Waltz."

"You mean like me?" asked Jacob. The class laughed. Billy looked at his friend and shook his head.

"Kind of like you, Jacob," smiled Mr. Martinez. "Except that he was a farmer, rancher, and miner who could survive for days in the rough desert."

"I could survive in the rough desert, too," Jacob challenged.

Billy started giggling so hard that his stomach hurt. He took off his big, round glasses to wipe the tears from his eyes. But when he put his glasses back on, things changed from funny to really strange.



"As I was saying, Waltz was born in 1810," Mr. Martinez continued. "He died in 1891. Nobody has ever found the **legendary** mine. It is probably real, though. I mean, it must be real. It *is* real. Some people have even been very close to, uh, it."

Mr. Martinez stopped and loosened the top button of his yellow shirt. He scratched his head a few times. Then he looked around at the class with big wild eyes. Billy had never seen Mr. M. like that before.

"There are still big chunks of gold waiting in those mountains," Mr. Martinez said as he pointed

to the map again. He stared at the map for a long time without saying a word. Finally he turned to the class and said, "Excuse me, but I would like to meet with Jacob and Billy outside, please."

Billy pointed to himself and raised his eyebrows. "Yes, you, Billy Smith," repeated Mr. Martinez. "Oh, and Heather, I'd like you to join us as well. Sit tight, class. We'll be back in no time."

Once the four of them were outside of the portable classroom, Mr. Martinez looked a little nervous. His eyes darted from side to side and sweat dripped from his forehead. "Heather," he began in a low voice, "I would like you to watch the class for the next few hours."

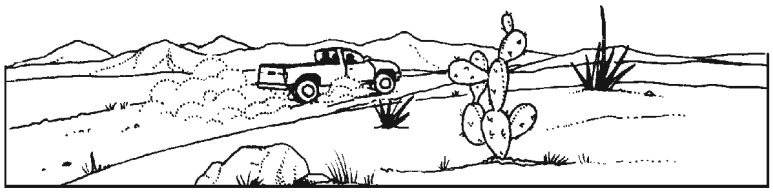
"But, Mr. Martinez, I'm not a teacher!"

"Heather, all you have to do is make sure they don't break anything. You can play heads-up seven-up, hangman, or whatever else you want."

"Could I even organize a spelling bee?"

"That would be a great idea. Now get going and we'll be back in a while."

Once Heather closed the door, Mr. Martinez turned to Jacob and Billy. "Let's get a move-on, boys! I've got three backpacks in my truck and the afternoon is getting late. Let's hurry before anyone sees us!"



Chapter 2: Mountain Ghosts?

Before Billy realized what was happening, they were at the outskirts of the city and climbing into the foothills. He sat in the middle of the truck cab with his arms folded, wondering if he should say anything. Mr. Martinez gripped the steering wheel with two hands and gazed straight ahead. Jacob turned his baseball cap backwards and stared out the window.

Finally Jacob turned and asked, "So Mr. M., are we really looking for the gold?" Mr. Martinez grinned and nodded. Then he pressed down even harder on the gas pedal.

"Holy **geezgrubbers**!" Billy blurted out. "But, but, it's just a legend, an old story—and they're going to look for us." He looked down at his watch. "It's already three o'clock. My mom is waiting for me in front of the principal's office right now!"

"They say that Waltz entered these mountains through Boulder Canyon," Mr. Martinez said as he pointed off to the right. "That's where we'll start. Are you in, Jacob?"

Jacob nodded. "Yep, and so is our friend here," he said as he slapped Billy on the back.

"Good," said Mr. Martinez, "because there's a rumor that a few people have spotted Waltz up here in the past few weeks. With things heating up again, this should be an **ideal** time to go." Their truck **veered** off onto a bumpy, dirt road. Mr. Martinez sped up, leaving a dust cloud streaming behind them.

"Are you talking ghosts?" Billy needed to know. "Because Jacob Waltz would be 192 years old!"

"Call it what you wish, my friend, but the ghost will help us find the gold."

"Oh gosh," Billy sighed as he slapped his forehead in disbelief. "They've gone mad, absolutely bonkers! I'll bet it's gold fever. We should be at school right now—they'll start looking for us!

"Wait, maybe we should go to the doctor first. I've read about gold fever on the Internet. They say people start acting funny when they think they're close to finding gold. Their eyes get big and yellow, and they start scratching their heads a lot. They can even laugh for over ten seconds at nothing at all."

Billy stopped talking because he could tell they were not listening. Mr. Martinez carefully pulled the truck off the right-hand side of the road and parked it behind two mesquite trees. "There, that should hide us," he said. "Could you guys grab the packs out of the back?"

Jacob and Billy opened up the tailgate and saw three different colored backpacks. "The green one is for you Jacob," Mr. Martinez called. "Hand the blue pack to Billy, and I'll take the big one."

Billy looked inside his blue backpack. He found a flashlight, two cans of beans, a full **canteen**, a musty pillow, and an old Mexican blanket. At the bottom he saw a long steel hunting knife. "So, Mr. Martinez," Billy called as he held up the knife, "is this so I can kill a ghost?"

Mr. Martinez looked at Jacob and then at Billy. "All right Billy, here's the deal: you can either come along **willingly**—"

"Willingly? But you dragged me out here!"

"You can either come along willingly," repeated Mr. Martinez, "or you can stay here and guard the truck. This is an important trip, and Jacob and I would like you to come along—but only if you are not going to complain."

Billy looked around him at the Sonoran Desert. There were no stores, no people, and no paved roads in sight. There were just sharp cacti, loose rocks, steep mountains, and a scorching sun. He knew that rattlesnakes, scorpions, coyotes, and **Gila monsters** roamed this desert. Maybe even mountain lions lived nearby.

Billy swung the pack over his shoulder. "I'll come," he said.

"Good," responded Mr. Martinez, without breaking a smile. "The knife is not to stab anybody. Knives can be used for cooking, **whittling** wood, or hunting."

Mr. Martinez locked the doors of his truck and looked around to see if anybody was watching. Then he lowered his hat and looked up in the direction of the sun. "We've got a few good hours to get past the first **ridge**," he said, pointing high up into the mountains.

Billy looked back at the distant city and pointed to the storm clouds on the horizon. "Do you think that's a monsoon storm coming this way?" Billy wondered out loud.

"We're going, Billy!" Jacob called from the trailhead. "Storm or no storm, we are going to find the lost gold mine." Jacob turned and started up the trail. Mr. Martinez followed him without saying a word.

Billy looked down at his dusty new shoes. Everything seemed dusty out here. Billy took off his big glasses and wiped them with his shirt. When he put them back on, Jacob and Mr. Martinez were already out of sight. Billy took one final look back at the city, tightened up his pack, and ran after them up the desert trail.

Chapter 3: Camp Coyote

The hiking trail was only wide enough for one person at a time. It wound back and forth through the foothills and over dry **washes**. Next to the trail, old saguaro cacti stood like the gatekeepers of these desert mountains. The three gold-seekers traveled in silence over the first ridge, dipped down into Boulder Canyon, and lost sight of the city behind them. Except for two quick pee breaks, they kept a steady pace.

"This looks like a good place to spend the night," Mr. Martinez said at last. He pointed up at a tall, narrow peak. "That's Weaver's Needle, where there have been reports of . . ." He stopped in mid-sentence. "That is where we will find the gold mine tomorrow. Let's set up camp."

Billy wondered what camp there was to set up. He had no sleeping bag in his pack, and nobody seemed to have a tent. He pulled out the pillow and blanket, and laid them down near Jacob's blanket. Jacob was busy **rearranging** some stones into a circle.

"Was that somebody's campfire?" Billy asked him.

"Must have been," Jacob replied without looking up. "Probably somebody else looking for the gold a long time ago." Jacob stopped piling rocks and held his hand up. "Ahh, that breeze feels mmm mmm good." He took off his sweaty Phoenix Suns t-shirt and hung it on a tree branch.

"Mr. M., do you think a monsoon storm is coming?" Billy worried.

Mr. Martinez looked up from his blanket. "Yeah, could be. The air is starting to swirl. But don't worry, Billy. See that rocky ledge up there? If the rain starts coming down hard, we'll be up there in two minutes."

By the time it got dark, Mr. Martinez had started a fire. The dried branches quickly burned and became bright orange coals inside the stone circle. Mr. Martinez rested an old pot across two of the stones. He poured in three cans of beans and blew on the coals. Soon yellow flames danced around the pot. The three stared silently into the **mesmerizing** fire.

"Mr. Martinez," Jacob began, "you never finished telling our class about the end of the legend. What happened to the Lost Dutchman?"

"Where did I leave off?" Mr. Martinez wanted to know.

Billy looked up. "You said that he used to disappear into the mountains—*these* mountains. And he would come back into the city with gold a few days later. So people tried to follow him, but he always gave them the slip. That's where you stopped."

Mr. Martinez was still staring into the flames. "He died in his house with a box of gold under his

bed. His friends asked him where the gold mine was, but he never really told them. They tried to find it for years, but never could."

"So, Mr. M.," Billy said delicately, "if Jacob Waltz died over 100 years ago, how have people seen him up here in the past few weeks?"

Mr. Martinez had that strange look in his eye again. Jacob sat up on his blanket. He and Billy waited for an answer. Mr. Martinez studied their faces, as if wondering how much he should tell them.

"Okay," he said at last, "I'll tell you what I know. For over 100 years, people have come to these mountains in search of this mine. Everybody has their **theories**. Some believe Waltz hid the entrance with rocks. Others believe an earthquake covered it up. **Skeptics** claim that it is just a myth. Other people believe it only opens at certain times of the year."

"How so?" inquired Jacob.

"Funny things happen with these monsoon storms," Mr. Martinez said as he looked up at the clouds overhead. "It's like there's electricity in the air. Monsoons are so powerful that they can scramble things—like time."

"Scramble time?" blurted Billy in disbelief. "What exactly does that mean?"

Mr. Martinez poked a stick into the coals. "During the stormy season, **portals** open up to different time periods. They are like doorways to the past and the future. During this scrambled time, our paths could cross with somebody from the past."

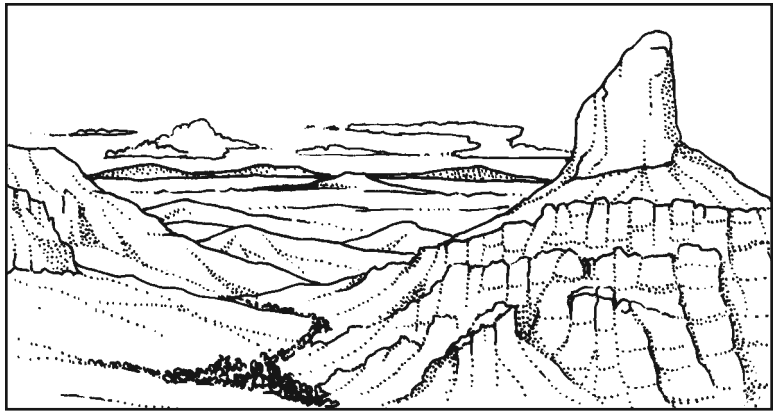
"And that is how you think people have seen Jacob Waltz recently," Jacob added.

Mr. Martinez nodded. "There has been pretty amazing proof lately. My brother-in-law and a friend were hiking here two weeks ago. Through their **binoculars,** they saw a man walking high up near Weaver's Needle. There was a burro walking behind him."

Mr. Martinez looked at the two boys. The yellowish color of the fire reflected in his eyes. "And on the next day, they found a nugget of gold on the trail," he whispered. "It was the size of a baseball."

Jacob whistled. Billy pulled the blanket farther over his shoulders.

"Tomorrow morning, we will forget the trail and follow that wash. It heads up the canyon to the base of Weaver's Needle." Mr. Martinez stopped to listen. One howl turned into a chorus of yapping and howling. "Yes, Billy, there are coyotes out here. But they don't go after people. They've probably just killed a deer—that's all."

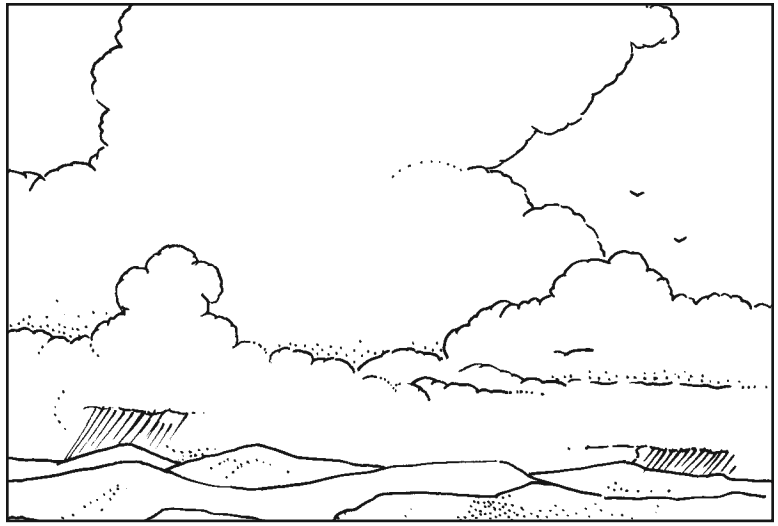


CHAPTER 4: The Next Day

Billy heard some rustling noises. For a moment his whole body froze. He slowly opened his eyes. Mr. Martinez was breaking sticks and putting them into the fire.

Billy quietly rolled his eyes up toward the desert sky. The sun was not up yet, but the dawn's light was turning the sky from black to light blue. Billy's body ached from sleeping on the ground. His body and blanket smelled like dirt. He could even taste it on his lips.

The three gold seekers ate a quick bowl of oatmeal and packed up camp. They headed up the wash before the sun's rays could peak over the steep canyon walls. Mr. Martinez walked quickly and didn't speak much. Billy was worried because he had that crazy look in his eyes—even scarier than the day before.



By noon, they were hot and sweaty. The temperature was well over 100 degrees F. Billy's feet ached. When they finally stopped for lunch, Mr. Martinez passed the canteen around. "Keep yourselves **hydrated** boys," he said, "because there's no telling how fast we might have to run down this hill!"

Mr. Martinez looked over at them and laughed for at least ten seconds. Then he scratched his head and laughed some more. Billy looked over at Jacob and saw that he was laughing, too. Jacob also seemed to have that funny look in his eyes.

Suddenly Jacob began to sing, "We're going to get rich today, la-da-dee-dee-da-da! And no more bills to pay, la-dee-dee-dee-da!" He stopped for just a moment. "Hey Billy, I'll buy you a new bike tomorrow! Do you want a mountain bike or

a motorcycle?" Mr. Martinez laughed, and Jacob shrieked again. Then Jacob started to scratch his head, too.

By mid-afternoon they were getting so close they could feel it. Jacob had stopped singing and Mr. Martinez scanned the mountainside for clues. Billy watched his feet carefully and tried not to step on any twigs.

As the hour went on, the air began to swirl. Small clouds from the horizon were now big, black, and rumbling overhead. There was almost a sweet smell to the air. Suddenly Jacob stopped and shouted, "I saw it, I saw it, I saw him!"

Mr. Martinez quickly put his hand over Jacob's mouth. "Shhh, shhhhh . . . that's better," he said. Mr. M.'s golden eyes looked into Jacob's golden eyes. "This should be about the right time. Now tell me, Jacob, where did you see him?"

Jacob pointed up to a pile of fallen rocks at the eastern base of Weaver's Needle. Mr. Martinez looked through his binoculars and smiled from ear to ear. "Well, I'll be! There's Wickety, the old man's burro." Billy looked up at Mr. M.'s big smile underneath the binoculars. His teacher was missing two teeth on the right side.

When a few big drops of rain fell, Mr. Martinez put the binoculars down. "Okay, guys, let's huddle up," he said. "This is a dream that is over 100 years

old. This legend is real, and we will become its final chapter. We are going into the mine to stuff as much gold as will fit into our backpacks. If we get split up, we'll meet back at the truck."

"But which way is the truck?" Billy asked.

"That way," Mr. Martinez pointed. "Just follow the wash—and if you don't see the truck, just keep going downhill. From there, you can hitch a ride into town." He paused and leaned down close to Billy's face. "But don't tell anybody about the gold."

"What will we do inside the mine?" Jacob needed to know. "What if he's in there?"

Mr. Martinez glanced down at the knife strapped to his belt. "We'll be fine," he answered. "There are three of us. Now empty out your packs. Let's **stash** everything behind these trees."

More big raindrops started to fall. Billy tucked his musty pillow and Mexican blanket under some rocks. "The food and water, too, Billy," Mr. Martinez instructed him.

"But Mr. Martinez, what if we get hungry or dehydrated?"

"Billy, we need room for the gold," Jacob explained.

"Do bring the flashlights though," whispered Mr. Martinez. "It'll be dark inside."

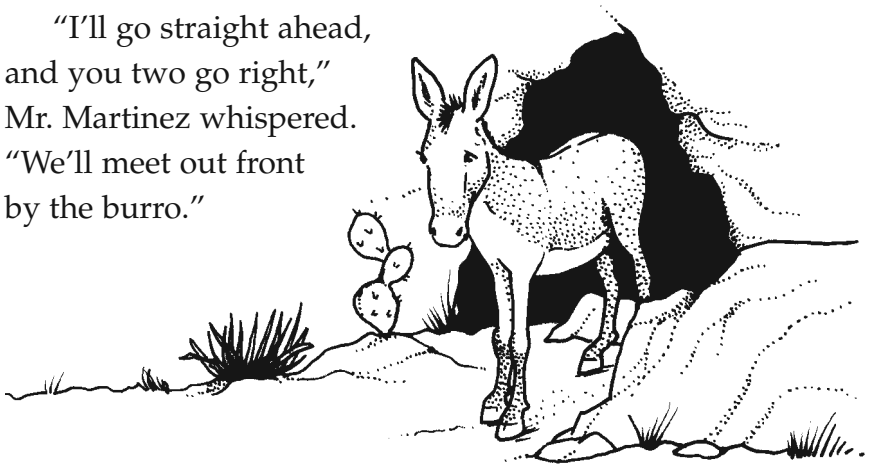
Chapter 5: The Gold Mine

At the mine's entrance, the old burro was tied to a rock. The **tattered** rope was fastened around her neck by just one loose knot. The burro's grayish coat looked as if it had spent many days in the desert sun. Her **ancient** face turned to watch the three approaching gold seekers. She stomped her hoof into the dirt.

"Easy there, Wickety," whispered Mr. Martinez, placing a hand on her head. He pulled some oats out of his front pocket. Wickety ate them from his hand. Mr. Martinez gave her a final pat and motioned the boys toward the entrance.

Inside the mine, it was dark. Mr. Martinez, Jacob, and Billy stood in the entrance room, waiting for their eyes to adjust. Slowly they could make out two tunnels: one straight ahead and one to the right. An old shovel and pick leaned against one wall.

"I'll go straight ahead, and you two go right," Mr. Martinez whispered. "We'll meet out front by the burro."



"I'm not going," said Billy. "I'm afraid of the dark!"

"Then you don't get any gold," Jacob threatened.

Billy looked at Jacob and then at Mr. Martinez. Their eyes glowed a soft yellow in the dark cave. "I'm not going," he repeated.

Mr. Martinez shook his head. "Okay Jacob, let's both try the center tunnel then."

Before Billy knew it, his teacher and friend had disappeared into the darkness. After a moment, he could no longer hear their footsteps. Billy's throat sank down to the bottom of his stomach. He gulped and leapt out into the light.

It was raining hard now. Billy could see lightning strike the desert floor miles away. In the far distance, he could see the lights of Phoenix slowly turning on for the evening. Billy thought of his mom and wondered if his school photo was already on milk cartons.

Wickety was getting soaked. Billy thought she seemed sad, so he walked over to her. "Sweetie, are you for real?" he asked before patting her head. "Are you really from the nineteenth century? Would you like to run free into the desert?" Billy started to loosen the rope around her neck.

But just then he heard a shout from the mine. Billy ran into the entrance room and waited for

his eyes to adjust. He heard Mr. M.'s voice, and it sounded happy. "Gold, gold, gold!" echoed throughout the mine.

Billy **cringed**. "Be quiet, you guys!" he screamed down the tunnel. "He could hear you!"

And then Billy turned toward the footsteps. They were coming from the tunnel to the right. He looked down and only saw the shovel leaning against the wall. He picked it up.

From the dark shadows, a face emerged. The face looked like old leather. Deep lines circled two eyes that seemed a century old. Its mouth opened into a big, scary smile and a gold tooth reflected the day's final light behind Billy. Billy gulped. "Jacob?" he said in a weak voice as he dropped the shovel. "Jacob, is that you?"

"Shhhh," came a voice.

"Jacob, I didn't do it!" he shouted. "I don't care about the gold—I just want to go home to my mommy!"

And the class laughed. Everybody was looking at him.

"Billy, are you okay?" Mr. Martinez asked. Billy looked up and nodded. "Good, because you can talk to Jacob about gold after class. Right now, we are talking about Arizona in the early 1900s. Let's see, where were we?"

"You just said that, in 1912, Arizona became the forty-eighth state," Jacob said. "Before that, you talked about gold seekers in the desert mountains."

"Thank you, Jacob," said Mr. Martinez. "If you keep that up, you may get an A in this class after all."

Jacob smiled and then looked over at Billy. "Are you crazy, amigo?" he whispered.

Billy looked down, embarrassed. This wasn't the first time he had daydreamed in class. "I don't know," he answered.

Heather yawned in the seat in front of him. From her stretching arms, a note landed on Billy's desk: "If you strike it rich, let us know. Love, Heather."

She started laughing. Billy saw that Jacob was laughing, too. But when Jacob turned around, he seemed to have that strange look in his eyes again. Billy looked down at Jacob's sneakers and stopped. They were unusually dusty. And there were cactus thorns in the soles.

"Jacob! Billy! Heather!" Mr. Martinez said in an **exasperated** tone. "I'm trying to teach class here. What should I do with you three?" He scratched his head without saying anything. Then he scratched his head some more.

"I'd like to see you three outside," he said at last. "The rest of you sit tight. We'll be back in no time."

Glossary

ancient very old (p. 21)

binoculars an instrument used to see objects that are far away (p. 16)

burro a small donkey trained to carry things (p. 6)

canteen a small water container usually made of metal (p. 11)

cringe to feel an inner shiver of embarrassment or disgust (p. 23)

emerge to come into view (p. 6)

exasperated irritated; angry (p. 24)

geezgrubbers a word that Billy invented (p. 9)

Gila monster a venomous lizard that lives in the Sonoran Desert (p. 11)

hydrated having enough water in one's body (p. 18)

ideal perfect; could not be any better imagined (p. 10)

legendary very well known; based on a legend (p. 7)

mesmerizing holding one's attention; hypnotic. For example: "It is difficult to take your eyes off of mesmerizing flames." (p. 14)

portal a doorway or entrance (p. 16)

prospector a person who searches for minerals such as gold (p. 5)

rearrange to move something into a different position (p. 13)

ridge a long and narrow hilltop, usually bordered by steep slopes (p. 12)

skeptic a person who often doubts or questions things (p. 15)

stash to hide something away for later (p. 20)

tattered torn, old, and in poor condition (p. 21)

theory a set of ideas used to explain something (p. 15)

veer to suddenly turn or change direction (p. 10)

wash a dry streambed that flows only during part of the year (p. 13)

willingly doing something out of free choice without complaining (p. 11)

whittle to carve wood into an object (p. 12)

Name _____

INSTRUCTIONS: As you read each chapter of *The Lost Dutchman*, fill in the story elements for that chapter. After you finish the book, identify the theme.

	Chapter 1 The Legend	**Chapter 2** Mountain Ghosts?	**Chapter 3** Camp Coyote	**Chapter 4** The Next Day	**Chapter 5** The Gold Mine
Setting					
Characters					
Story Sequence					
Theme					

THE LOST DUTCHMAN • LEVEL V • 1

SKILL: COMPREHENSION

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Name _____

Reading a-z

INSTRUCTIONS: In your own words, write a definition for each of the following vocabulary words:

prospector _____

skeptic _____

whittle _____

stash _____

canteen _____

emerge _____

burro _____

Now pick two words and use each in a sentence.

1. _____

2. _____

THE LOST DUTCHMAN • LEVEL V • 2

SKILL: VOCABULARY

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Chapter 1: Hammock Life

"Cammy, just try to say it once: 'Obrigada'. It means 'Thank you'."

"Dad, I already told you! I don't speak Portuguese, and I don't want to learn."

Cammy's mom rolled her eyes. Most of the trip had been like this. For some reason, Cammy was not enjoying the adventure. Most twelve year olds would think a boat ride up the Amazon River was pretty cool.

Cammy poked at her food. "This is the third lunch in a row they've served this same fish. I'm getting tired of it."

"It's a good thing we brought our own food," said her dad.

"Yeah, but too bad there are ants in our food," continued Cammy. "They climbed right up the poles and into our stuff. How did they get on the boat anyway?"

"They must have paid money like the rest of us," responded her mom with a smile.

Cammy laughed. "And did the mosquitoes pay, too? Because I've got a few bites here on my arm. See?" Cammy held out her tan and bumpy arm. "If I get **malaria**, I'm holding you two responsible. This trip was your idea."

"Is there anything that you *do* like about this trip?" her dad asked.

"Let's see . . . that there are only three days left until Manaus? Come on, Dad, you know I like watching the sunsets. And yesterday Mom and I saw one of those cool pink dolphins. There! That was pretty positive, eh? Obrigada."

"Well, Ms. Smarty Pants," her mom began, "tomorrow we're going to arrive at a town called Santarém. That will be something new to look at."

"Do we get to get off?" Cammy asked.

"No, but you'll get to see an Amazon town up close. And some new people will get on."

"What if I did get off? And slipped into the jungle and never came back?"

"Then we'd just have to live without you, my dear," said her mom with a smile.

After finishing lunch in the cafeteria, Cammy and her parents walked back to their covered sleeping area. They each climbed into their own hammock.

For three days now they had traveled upriver on this big boat. Every once in a while they passed little wooden houses on the bank of the river, but mostly it was just one thick, green jungle. Cammy reached for her travel **journal** to reread her first three entries.

March 24, 2002

Today we left Canada and landed in a city called Belem. My parents and I are going to travel up the Amazon River in a big three-story boat that carries mostly local Brazilians. Mom and Dad did it about 20 years ago. (I think they're trying to relive the olden days.) We're going to sleep in big hammocks for six nights!

March 25, 2002

Today was our first day on the boat. My parents are talking to people in Portuguese, and I can't understand anything. I couldn't sleep very well in my hammock. Mom says I'm getting cranky already. But nobody here is my age! I wish I was back in Vancouver with my friends. Brian is having a party on Friday, and our soccer team has a tournament over the weekend.

March 26, 2002

Today was better. A Brazilian man had a soccer ball, so we played on the top deck. It was fun until somebody kicked the ball overboard! Then we sat up top and watched the sun set. It's cool here because you can see forever. And the air here is kind of sweet. Dad says to breathe it in deep now, because it's the best air in the world.

Chapter 2: The Canoe People

On the following day the boat stopped in Santarém, a medium-size town on the bank of the river. A Brazilian family boarded and hung their hammocks in the sleeping area. There was a girl about Cammy's age. She had curly black hair and a big smile on her face.

"Hello, do you speak English?" the girl asked Cammy with a foreign accent.

"Yes," answered Cammy. "And you are Brazilian? How did you learn English?"

"My family live for one year in Toronto, Canada. So I go to school with Canadian kids and learn English. My name is Gabriela."

"Cool. My name is Cammy. It's nice to meet you. Hey, do you want to check out the boat?"

Gabriela smiled. "Yes, sure," she said. "Let's go see."

The two new friends explored the boat from front to back. When they finally reached the top deck, Santarém was already out of sight. As they gazed out over the wide river, Cammy spotted two little canoes paddling toward the boat. A man was in one canoe and two young boys were in the other. Their skin was dark brown. When they reached the side of the boat, they slapped their paddles hard against the water.

"What are they doing?" Cammy asked.

"They are asking for things, like food," Gabriela answered. "It is kind of like a tradition. Those people are very poor. So the people on these big boats help them out."

Just then somebody from the lower deck threw a white plastic bag into the water. It landed near the two boys. They paddled over to the bag and picked it up before it sank.

Cammy rested her elbow on the railing and stared out at the canoe family. "I wonder what their lives are like," she said. "Do you think we could make a bag to throw to them?"

"Do you want to?" asked Gabriela.

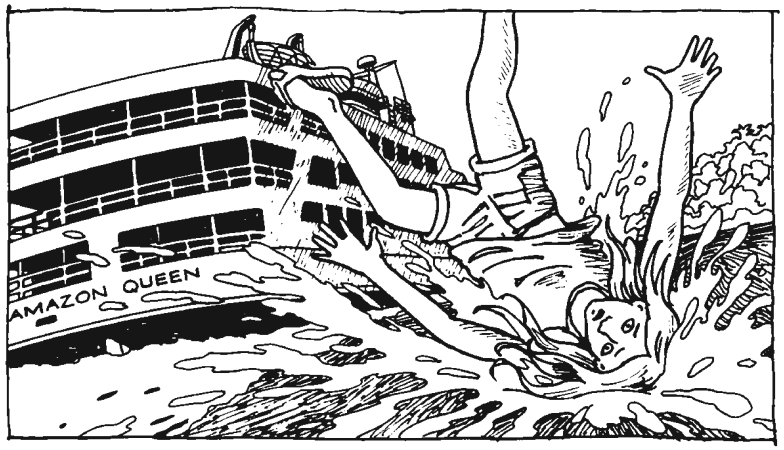
"Yeah, let's go."

The two girls raced back to Cammy's hammock. Cammy emptied two plastic grocery bags and shook out the ants. They quickly filled each bag with fruit, crackers, and a can of soda. Cammy also put in a bracelet that she had made. Then they ran to the lower deck.

"Hey, look," pointed Gabriela, "there's another canoe coming."

A young boy and an older girl paddled hard to reach the big boat. Then they slapped their paddles against the water and stared up at the two girls.

Cammy and Gabriela threw their bags in close **proximity** to the canoe. The older girl paddled while the young boy scooped them up. He handed the bags back to the older girl. Cammy could see her pull out the bracelet. She held it in her palm and carefully examined it. Cammy squinted to see her face, but the canoe had already drifted too far away.



Chapter 3: While the Boat Slept

The following day was one that Cammy would never forget. The swaying of the hammock somehow woke her up early. She rolled over to see what time it was. The sky was almost totally black, but she could tell that it was dawn. There was a hint of **fuchsia** in the black and a faint streak of orange below.

Everyone else was still asleep, rocking quietly back and forth. Cammy's tan feet slipped into her sandals, and she walked up to the top deck.

The air still smelled like fresh rain. Cammy took a slow, deep breath, inhaling through her nose. Everything was silent except for the chug and hum of the boat's engine.

The sky grew lighter purple, and Cammy could see where the sun was going to rise. As she looked

across the water toward the trees, she spotted a small person paddling a canoe toward the boat.

Cammy ran downstairs and quietly filled up another plastic bag. Then she ran to the lower deck, but the canoe was still not close enough. Then she climbed to the upper deck. Maybe if she threw it hard enough, the canoe person could reach the bag before it sank.

Cammy stood up on the middle rail and pressed her knees into the top rail for support. She cocked her arm back, and then swung it forward with all of her might. The plastic bag flew out into the river. But Cammy's body leaned too far forward, and her knees pivoted over the rail. She fell down, down, down, into the Amazon River.

Cammy's body sank deep underwater. When she finally surfaced, the boat was already fifty meters away. "Heeeeelp!" she screamed at the top of her lungs. "Somebody help me!"

Cammy **frantically** swam in the direction of the boat. But it continued to chug upstream while the current carried her further downstream. Nobody was standing on the decks. Nobody had seen her fall. The sun was not even up yet. The passengers were still asleep in their hammocks.

Chapter 4: The Little River

Cammy felt two hands grab onto her shoulders. Before she knew it, they had pulled her up and into a canoe.

Suddenly she was resting on a huge fish, almost as big as herself. It was cold, slimy, and still breathing. "Ahhhhhh!" she screamed, and jumped away from the fish. A little giggle came from the back of the canoe.

Cammy turned around. The canoe's paddler was a little boy no more than eight years old. He had dark brown skin and straight black hair. He wore a red shirt and blue shorts, and his feet were bare. The boy stared at Cammy like she was from another planet. Then he looked at the fish and laughed again. Cammy studied him **distrustfully**.

The little boy paddled the canoe toward the shore. There were no houses in sight, but Cammy did spy a narrow **tributary** winding back through the jungle. The boy expertly steered the canoe into that opening, and soon they were traveling deeper into the rainforest.

Tree branches and leaves formed a thick green canopy overhead. Vines hung down to the water. The little river narrowed. The loudest sound was the light splashing of the boy's paddle in the water. Bird and animal chatter echoed throughout the forest like background music.

After another hour of paddling, they arrived at a small house. It was all made of wood: the roof, the walls, the porch, and the steps leading down to the little river. There was no glass in the windows and no door on the entrance. They were simply open.

When the little boy shouted up to the house, three kids appeared in the doorway. They stared at Cammy for a moment and then disappeared back inside. She could hear them whispering and giggling. Finally, a boy in cut-off shorts ran down the stairs and tied up their canoe. He touched Cammy's blond hair and stared at her as if she were an alien. Then the two brothers picked up the big fish and quickly ran into the house.

Cammy suddenly felt very afraid. Besides the house, she could not see any other signs of human existence. And the jungle was so thick that she could hardly see the sky. A big mosquito landed on her arm and started sucking her blood. She slapped at it frantically. "Ahhhh!" Another one landed on her neck. "Malaria!" she screamed, as her hands spun like an out-of-control windmill, slapping her body up and down.

Giggles came from the direction of the house. Four curious faces peaked out of the window. But when Cammy looked up, they ducked down. Their giggles turned into loud laughter.

That's when Cammy started to cry. She lay down on the ground in a ball and sobbed until her whole body trembled. Everything was different here, her parents were far away, and these weird kids didn't even speak her language. She was lost in the middle of the Amazon rainforest! Cammy closed her eyes and everything went blank.

Chapter 5: The First Night

When Cammy felt a hand on her forehead, the sky was almost completely dark. Rain had started to fall. She could hear it dripping through the trees. Cammy's tears had dried, and she was starting to feel cold and wet.

The hand she felt was that of the oldest girl, maybe two years younger than Cammy. Her face was soft and round, with kind eyes that looked like those of an older woman. "Ixtola," she said to Cammy. She put her hand on her chest and repeated, "Ixtola."

Cammy looked up at her and smiled. "Cammy," she said. "I'm Cammy."

Ixtola helped Cammy to her feet and up the wooden steps. On the porch stood a short man with his arms crossed. His eyes studied Cammy distrustfully as she ducked under the doorway.

Inside it was dark except for a fire in the middle of the room. Shadows danced on the wooden walls. The two boys sat on the floor near the fire. The littlest girl helped a woman peel vegetables over a table. That woman had black hair with gray streaks in it. Her eyes were a deep, dark coffee color. She smiled at Cammy and motioned for her to sit. Cammy sat on the floor next to her friend, the paddler.

Ixtola's mother handed them bowls containing something white that looked like soup. It had vegetables, leaves, fish, and other stuff in it. There were no spoons. Cammy closed her eyes and took a small sip. "Mmmm," she sighed, opening her eyes. The entire family laughed. They were relieved that she liked the food.

After dinner Cammy sipped her tea and watched everyone's shadows dance on the walls. She also watched the smoke blow out of the window and into the Amazon sky. "Wow," Cammy

thought to herself, "last night I fell asleep next to my parents on the boat. Tonight I'm in the middle of the Amazon, getting fed by natives."

Then Cammy slowly looked around the room. The family was softly talking and had stopped staring at her. She took the opportunity to study their faces, dirty fingernails, and bare feet. These were the kind of **exotic** people that she had only seen on television. But tonight they did not seem very exotic. This was just a family talking after dinner. Each person had a name, just like in Cammy's family.

Chapter 6: A World Away

March 30

This was my first full day here. My brain hurts from trying to communicate with them. I feel really tired. Last night my body was really itchy. I think there are fleas in my bed. And I kept thinking about my parents.

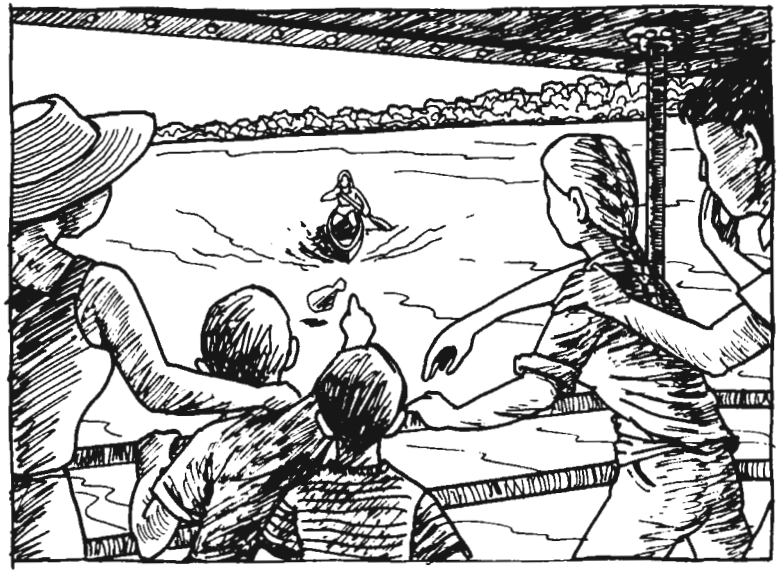
March 31

This morning Ixtola and I went to the garden and pulled up ***manioc*** *roots. In the afternoon we saw a group of little monkeys up close! And then we found some bananas just growing on trees! Ixtola cut them down with her* ***machete****.*

April 1

Today they gave me canoe lessons. Ixtola's dad said to give me one of their canoes to go to Santarém. From there I can get back on a big boat. We can't really talk to each other, but we use our hands until we understand. Ixtola's little brothers taught me how to count to ten.

From her favorite tree, Cammy stared down the little river. Tomorrow she would get in the canoe and paddle downstream. She folded up the piece of paper that Ixtola had given her and looked back at the wooden house. This place didn't seem so strange anymore. Cammy would miss Ixtola's family, but she promised to return. Maybe she would show the rainforest to her own kids someday.



Chapter 7: Looking Up

The big boat had reached Manaus, picked up new passengers, and turned around to chug back downstream. Johnnie and Jared were two of its new passengers. Their parents had brought them all the way from Australia to see the Amazon rainforest. They had already slept in hammocks for three nights. The big boat was getting close to Santarém.

"What do you suppose their life is like?" Johnnie asked his older brother.

"I don't know," Jared answered, "but they do get to canoe all day. Look, they just grabbed the bag of cookies you threw down!"

Johnnie and Jared watched from the top deck as a little boy with brown skin opened up the plastic bag. “I wonder what kind of house they live in,” Johnnie wondered out loud.

“It’s probably like that small wooden one,” said a man who was leaning on the rail.

Johnnie looked over at him and nodded. Next to the man was a woman. She clutched a plastic bag in her right hand. “Excuse me, but are you going to throw that too?” Johnnie asked.

The woman looked at him and tried to smile. “Yes, but I’m just waiting for the right moment.”

“What’s inside?” he asked.

“A wish,” she said.

“Hey look, there comes another canoe person now!” Jared exclaimed.

From the upper deck they could see a person paddling hard toward the big boat. It looked like a small girl. She slapped her paddle into the water and waved her arms.

The woman stood on the middle rail and threw the bag as hard as she could.

The girl paddled to the bag and put it in the canoe. She opened it up and peered inside.

Jared looked through his binoculars. “That’s strange,” he said. “It looks like she has blond hair.”

The man excitedly tapped Jared on the shoulder. “Excuse me,” he asked, “but can I look through those for a second?”

Jared handed him the binoculars. The man looked through them and started laughing out loud.

“Is it her? Is it her?” the woman asked.

The man laughed again. “It’s Cammy alright!” he exclaimed. “You threw that bag down to your very own daughter!”

Something splashed so hard next to Cammy that it almost tipped her over. She regained the canoe’s balance and looked down into the river.

A man’s face slowly emerged from the water. “Can you give me a lift, young lady?” he said.

“Dad! What are you doing here?”

“That’s what I wanted to ask you,” he said, out of breath. “But first help me into the canoe.” Cammy pulled her dad up into the canoe and gave him a big, wet hug.

“I fell off the boat. I didn’t jump,” she wanted to make clear. “But I learned a lot of things.”

"Well, I jumped," her dad said. "And I hope it was worth it."

Cammy looked up at the big boat as it chugged farther away. She could see her mom waving from the top deck. Cammy waved and blew kisses until she couldn't see her mom anymore.

Then she turned to her dad and said, "It's only about ten hours to Santarém, you know."

"What do you have in the basket?" her dad asked. "Enough food for the both of us?"

"Let's see . . . I've got bananas, manioc bread, and lots of mangoes. There are um, dois, três, quatro, cinco, seis, sete, nove, and dez."

Cammy's dad smiled. "So you could learn a **foreign** language from natives, but not from your own father, eh?"

"No, Dad. Now I want to learn from you too. Could you teach me to count up to twenty in Portuguese?"

"That depends on how well you canoe, my dear," Cammy's dad said as relaxed his hands behind his head. "This trip was your idea."

Glossary

distrustfully	in a suspicious way; without trust (p. 13)
exotic	something out of the ordinary, usually from a faraway place (p. 18)
foreign	from a different country or language (p. 23)
fuchsia	a very bright pink color tinged with purple (p. 11)
frantically	wildly; worriedly (p. 12)
journal	a diary, or blank book, in which a person writes news, thoughts, or feelings (p. 6)
machete	a wide and heavy knife that is used for many purposes (p. 19)
malaria	a dangerous tropical fever that is spread by mosquitoes (p. 5)
manioc	the starchy root of a tropical tree that is used for food (p. 19)
proximity	closeness in space; nearby (p. 10)
tributary	a river or stream that flows into a larger river (p. 14)

Name _____

INSTRUCTIONS: Make a timeline of the story. Include six main points from the story and supporting details. Next, use your timeline to write a reaction to the story.

Who? What? Where? Why? How?

Start

Adventures on the Amazon River Timeline (When)

Introduction

Problem

Action

Climax

Resolution

Conclusion

Finish

Your Reaction:

_____

_____

_____

_____

_____

ADVENTURES ON THE AMAZON RIVER • LEVEL V • 1

SKILL: COMPREHENSION

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Name _____

Reading a-z

INSTRUCTIONS: Follow the instructions in each section below.

A. Similes
Use similes to describe the following:

The river _____

The large boats _____

The little canoes _____

B. Onomatopoeia
Use onomatopoeia to describe the sound made by the following:

The canoe paddles hitting the water _____

The birds in the rainforest _____

The noise of a caiman slipping into the water _____

C. Imagery
Use imagery to describe the following:

The houses along the riverbanks _____

_____

The large boats _____

_____

The little canoes _____

_____

ADVENTURES ON THE AMAZON RIVER • LEVEL W • 2

SKILL: SIMILES, ONOMATOPOEIA, IMAGERY

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Treasure in the Puget Sound

A Reading A–Z Level V Leveled Reader
Word Count: 3,620

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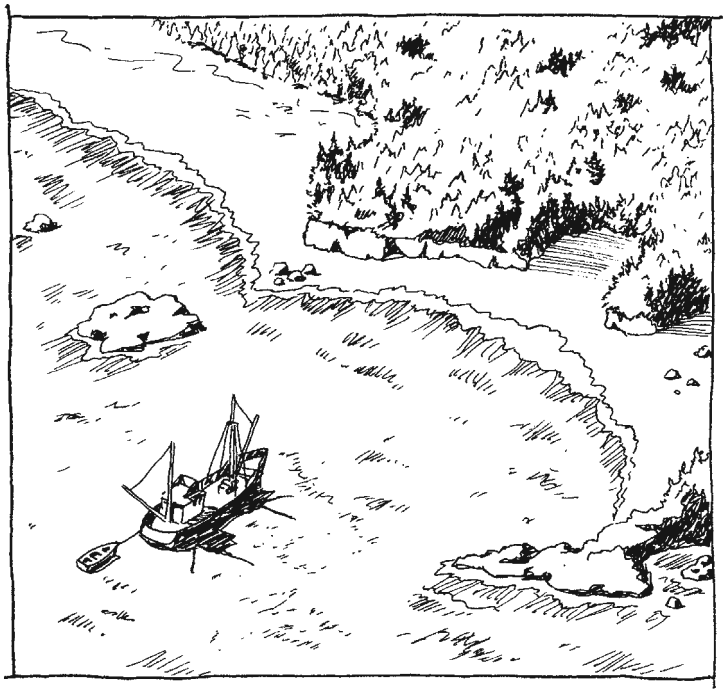
Treasure in the Puget Sound



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Illustrated by John Kastner

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Correlation

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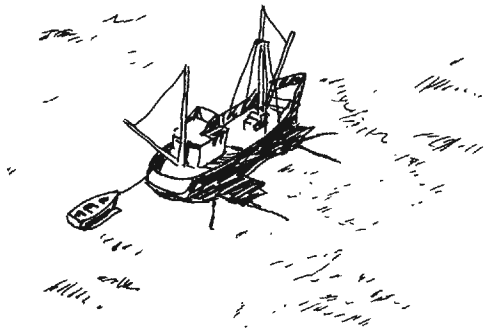
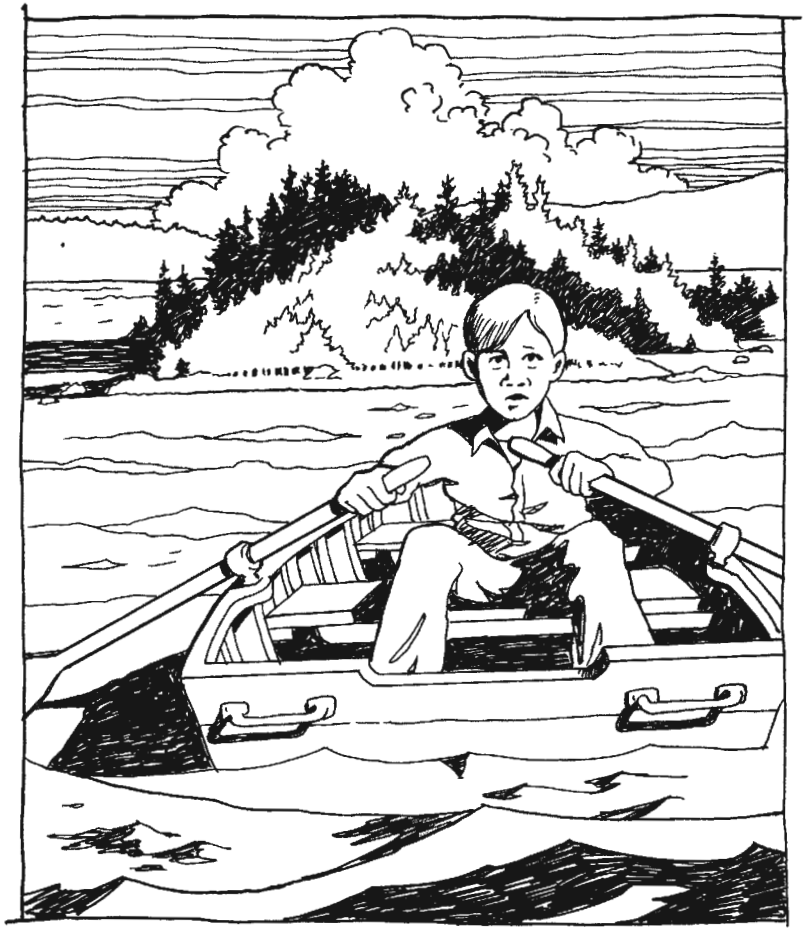




Chapter One

My name is Tim Hawkins. My friends suggested that I record the story of the treasure on an island in the Puget Sound. My friends want the entire story to be told, but there is one thing I can't reveal. I can't tell you where the island is because there are still riches on that island.

The adventure began when Johnny Bones came to stay at the Lewis & Clark Inn. My parents owned the inn, and I worked for them.

Bones was a large man with a **hideous** knife scar across his cheek. He was an old seaman and looked the part. Bones swaggered into the inn, placed $200 on the counter, and demanded a room. That was an awful lot of money when I was a kid, so my father gave him a room without question. Bones dragged his sailor's chest upstairs and settled in.

Most days Bones was quiet and remained in his room, but in the evenings he came downstairs to drink rum. After a few drinks, he got loud and swore. A couple more drinks and he sang old, **vulgar** sailing songs.

Nobody was willing to **confront** Bones and request that he be more **civil**. One night he kicked over a chair and Dr. Living, my dad's best friend, got angry and told Bones to shut up.

Bones stared Dr. Living in the eye, and Dr. Living stared right back. I thought they were going to fight, but Bones turned and walked away without saying a word. Dr. Living suggested Bones might stop drinking so much rum before the drink killed him.

Chapter Two

After Bones had been living in the inn a few weeks, he hired me to be his lookout. If I ever spotted a one-legged man coming toward the inn, he wanted me to **alert** him. Bones seemed very afraid of the one-legged man, so I was curious. It seemed like a harmless adventure. I told him I would do it.

Ignoring the doctor, Bones continued drinking rum every night. When I asked why he didn't listen to the doctor, he said he'd get sick without his rum. If you asked me, he already looked sick.

One night when Bones was drinking and singing, a pale, short man came to the inn. He was dirty and looked like he had just returned from a long **voyage**. That was common. But this man was missing two fingers on his left hand and walked with a limp.

When the man saw Bones, he went straight at him. Bones turned and saw him. "Black Dog!" Bones exclaimed. "What are you doing here?"

"I have come for what is owed me," Black Dog replied. He seemed ready to kill to get whatever it was he wanted.

"I have nothing," Bones said. He took a couple of steps backward, seeming a little less tough right then.

"Where is it?" Black Dog demanded. He pulled a long, **shimmering** knife from his jacket.

Customers began to scatter toward the walls. I was shaking. This was more adventure than I wanted.

"Leave me alone." Bones pulled his own knife. They stared at each other for what seemed like hours.

Suddenly, Black Dog jumped at Bones and slashed him on the arm. They wrestled for a few minutes, breaking tables and chairs. The rest of us edged toward the door.

Black Dog appeared to maintain the advantage. Then the fight stopped. Suddenly, everything was quiet and no one moved. Black Dog pulled his knife from Bones's chest and wiped the blade on Bones's shirtsleeve.

Chapter Three

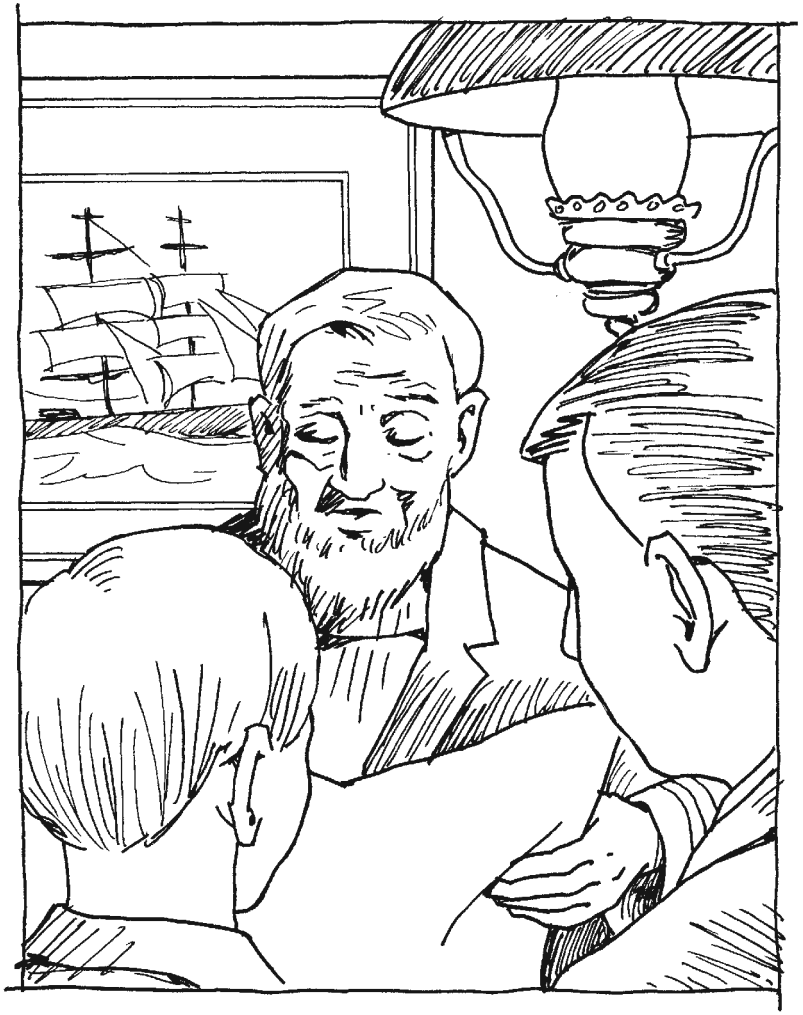
Black Dog left Bones and went upstairs. I heard him going room to room, kicking in doors as he looked for the room that was Bones's.

Just then, Dr. Living arrived. He went to Bones immediately, but the old seaman was already dead. I explained what had happened and told him Black Dog was still upstairs. After the doctor called the police, I followed him upstairs.

We found Black Dog trying to pry open the lock on Bones's chest. When the doctor kicked Black Dog in the back, sending him sprawling, the knife slid under the bed. Black Dog got to his feet and the doctor told him to give up, that the police were on their way.

Black Dog had no desire to talk to the police. He ran to the window and climbed down the fire escape.

The doctor finished opening the chest. It was filled with some clothes, an old compass, two pistols, and a birth certificate. Under that layer was a false bottom. There was some money in the bottom of the chest, all brand-new-looking, and some papers. Among the papers was a handmade map with three red crosses drawn on an island.



Chapter Four

In the packet with the map was a slip of paper with the name *Captain Glint* written on it. There were also badly written notes that suggested a huge treasure of money might be hidden on the island shown on the map.

Dr. Living thought we should take what we knew to Robert Jacks. He was an older, retired fishing captain. If anyone might know about the island on the map, it would be Jacks. We took the map and notes to him, and I related as much as I knew about the map and about Bones. I also told him about the one-legged man.

Jacks knew the story. And he knew all about Captain Glint. He believed that if the map was real, there could be a lot of money buried there. The reward would be large.

During World War II, Glint and his men were able to **hijack** a military ship carrying payroll for 10,000 soldiers and officers. The ship was outfitted like a fishing vessel so that it wouldn't attract attention. It wasn't well armed and there weren't many gunboats to guard it because of the war. The Navy thought they could sneak it into the naval base at Bremerton. Somehow, Glint and his men found out about it and planned an attack.

Glint and his men got away with the payroll and hid the money before they were caught. Most of them got away. Glint was put in prison, where he was killed. During the trial, or after, he never revealed the location of the buried money.

Chapter Five

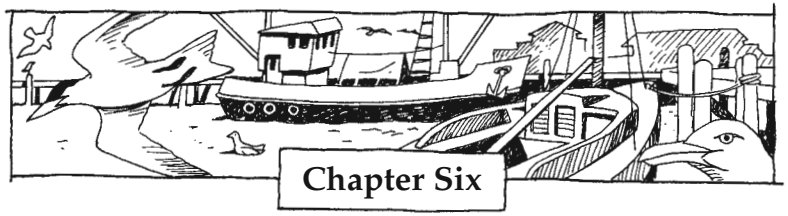
After hearing about Bones and the one-legged man, Jacks believed the map was real. He said he would personally find a crew to search for the money. He thought he knew the island in the drawing. On the condition that I could serve as cabin boy, Dr. Living agreed to let Jacks plan the voyage. The doctor wanted me to have a share of the reward, thinking it might help repair the damage to my parents' inn.

I was excited. It's every boy's dream to go on a voyage searching for buried treasure. I couldn't have asked for a better adventure.

When I got home, the police were just leaving. They asked me what I knew. I was afraid to lie to them, but I knew I had to keep the money a secret. As my stomach filled with butterflies, I told them I knew nothing. I hate to tell lies.

Two days later, a boy my age named Frank came to the inn. Frank told me to say goodbye to my parents and meet the *Spokane,* the boat we would be sailing on, down at the fisherman's **terminal** on the docks. Jacks sent Frank to work for my parents while I was gone.

This was the first time I'd ever left home, and I was sad to say goodbye to my mom. I have to admit I cried a bit. As excited as I was, I was also afraid. I ran all the way to the waterfront.



Chapter Six

When I got to the boat, Captain Elliott welcomed me aboard the *Spokane.* He told me to report to Old John Gold in the **galley**. Gold was a tall man, missing his left leg from the hip down, and with a green parrot on his shoulder. He had a wooden leg and used a crutch to get around.

Gold looked like the man Bones had been afraid would find him. I was shaking a bit when he reached to shake my hand.

"John Gold's the name, ship's cook."

"Tim Hawkins," I replied, still shaking.

"Well, you look fit for an adventure. I hear we are sailing to find some silver." Gold seemed to know more than he should about the voyage. Jacks was supposed to keep the money a secret.

"I wouldn't know," I replied. "I'm just the cabin boy." I hate lying.

John Gold was a strange man, but he didn't seem to be the **ruthless** pirate that Bones thought he was. I couldn't imagine Jacks would hire a pirate as ship's cook, so maybe it wasn't the same man.

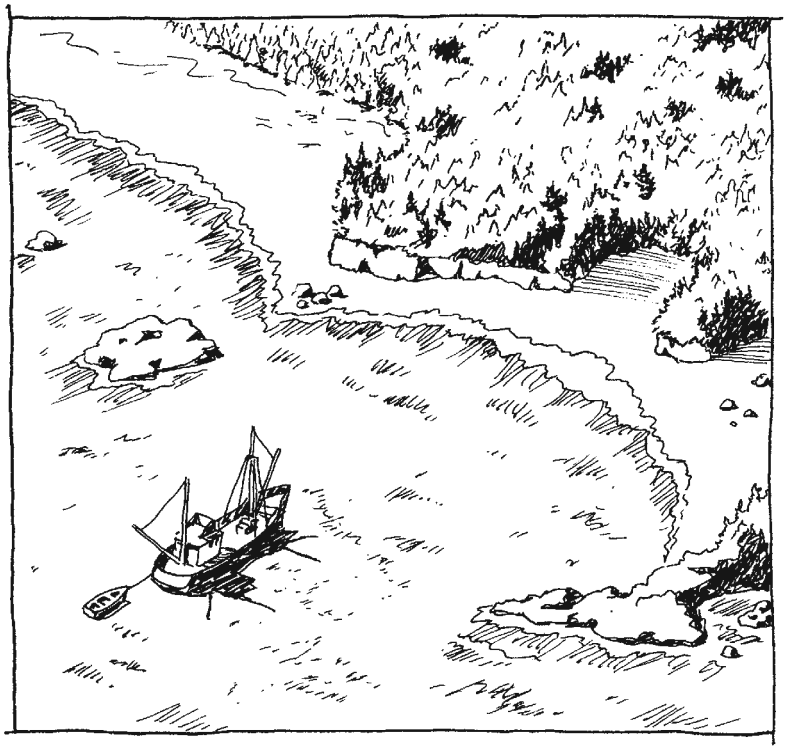
Chapter Seven

Captain Elliott didn't like the crew—any of them. He also didn't like that we were sailing to an island based on a handmade map and looking for buried government money. He thought the whole thing was a foolish plan.

Jacks protested that he didn't tell anyone about the mission, but the doctor and I ignored his defense. Dr. Living agreed that the crew seemed untrustworthy. He believed the captain and John Gold were the only honest men on the ship.

Too many of the crew had guns for me to feel safe, and I only trusted the doctor and the captain. Maybe John Gold was a good man, but I didn't understand why he would leave his own pub behind to be a cook on a ship. He had to know something about the money.

The captain agreed to stay on board and lead the voyage, but he brought a few of his own men as part of the crew. I suspected we might need some friends when we reached the island.



Chapter Eight

The voyage to the island took only a few hours. Between Jacks and the captain, there was no problem reading the map. There were so many islands in the Puget Sound, it confounds me how anyone could tell one from another.

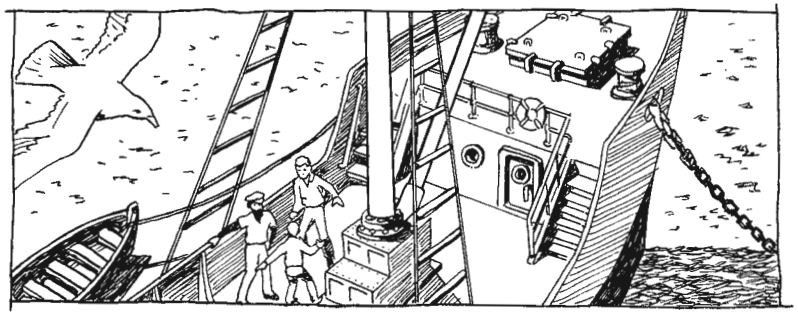
We dropped anchor just off shore from a large island covered with forest. When Jacks told the captain to pull into a small cove with a sandy beach, I could feel my heart race. This was it—we had found the island.

It was late in the day, so a thorough search of each possible site wouldn't begin until the morning. For now, everyone wanted a place to sleep. I found an old apple barrel on deck and climbed inside to get out of the wind that seemed to never stop blowing.

As I got settled to sleep a bit, I overheard Gold and some of the crew talking nearby. What I heard frightened me. I became convinced that the lives of all the honest men on board were in danger.

John Gold's words were terrifying. He had served under Captain Glint and called himself a "man of opportunity." I assumed this meant he was a pirate and a killer. The plan, as he explained it, was to wait until the doctor and Jacks discovered the money and loaded it onto the ship. Once we were heading toward home, he and his men would **mutiny** and **commandeer** the ship. All those who opposed him would be killed.

I was very afraid. Gold explained the details of his plan to his men. Then, suddenly, he told one of the sailors to see if there were any apples in the barrel. I panicked and just before he reached into the barrel, another of the men suggested they drink to seal their plan. Agreeing enthusiastically, they all went to get their rum. I jumped from the barrel and ran to find the doctor.



Chapter Nine

I explained to the doctor and captain what I had overheard, and they agreed that we were in danger. The captain suggested we should continue with the mission. If we stopped now, he thought, Gold would stage a mutiny and kill us immediately. We would wait for the right moment and launch our own attack.

The following morning was, as usual, cold and rainy. I was feeling a touch of seasickness, so I skipped breakfast. I went to the island with the captain and the doctor. As soon as we reached shore, I slipped away on my own because I didn't want to be around Gold and the other men any longer.

As I explored the island, I found the foliage thick and the ground rough. After an hour or so, I was standing in a clearing not far from a creek that ran down to a beach. For the first time since I heard Gold and his men discussing their plan, I felt

excited again. I experienced the thrill of exploration as I heard wild birds and strange noises I couldn't identify.

While I stood in the clearing, I saw something moving just beyond the trees. I had no idea what kind of animals might live on this island. Given the choice, I'd rather go back to the search group. At least with Gold, I knew what I was up against.

As I walked, the creature seemed to move very swiftly from tree to tree, as though it was trying to head me off. I pulled my knife from my belt, hoping to defend myself as best I could. To my surprise, the creature leapt from the trees and threw itself at my feet. It was a man.

He begged to be taken from the island. He said his name was Ron Gunn and that he had been stranded for many years. Dressed in old rags, he was very tan and dirty. He said he was a member of Glint's crew who had been left behind when he disagreed with their plans for the money. I told him some of Glint's men were on the island now.

Gunn knew the island well, and he knew where the money was buried. He thought for a minute and decided he had a plan, but he needed to know if there were any crewmen who were not with Gold. I said there were at least ten honest sailors, including Gunn.

Chapter Ten

While the rest of the crew searched for landmarks that might lead to the red crosses on the map, we dug the money from its hiding place. Gunn said two of the crosses were false marks—that only one cross was the true location where the money was buried. We pulled twenty boxes of money from the hole and then put the dirt back. After Gunn hid his shovel, we moved the money to a shallow cave he had dug into a small mountain on the island.

There was a lot of money in those boxes, easily more than a million dollars. That's not an amazing amount of money today, but back then it was a

fortune. **Scoundrels** would do anything to get their hands on that much money.

Gunn figured they would split up to search for the money. When one of the smaller groups found the actual spot, we would try to split them up. While we waited, I felt more and more afraid. Gunn's plan didn't seem too intelligent to me.

It seemed like hours had passed before a group of seven men found the hole we had dug. Three of them were the captain's men, which made me feel a little better. We threw rocks at them and they scattered to avoid getting hit. While Gunn stayed hidden, I ran toward the men that I trusted. Gunn continued throwing rocks at Gold's men.

I told the captain's men what was happening. They each had pistols, so we surrounded the others and confronted them. They surrendered and begged us not to kill them. Gunn helped us tie them up, then we stuffed their shirtsleeves in their mouths. We left them secured to a tree.

We discovered the second group and easily captured them as well. We now had seven good men with us, but the captain and the doctor were with John Gold. As a group we could take them, although it would be difficult. Gold's men were loyal, and he would do anything to get that money.

Chapter Eleven

After nearly an hour, we found them. The doctor and the captain were with John Gold and five of his men. Gunn wanted to separate Gold from the others so that he could get **revenge** for being left behind on the island all those years. He said it was Gold who gave the orders for him to be **marooned**.

We devised a plan. I would walk into the open and act like I had been lost all morning. The others would then jump Gold's men and subdue them.

I was very nervous. I hate lying, and I was very afraid of Gold. He was a **perceptive** man, and he might suspect I wasn't telling the truth.

When I walked into the clearing and greeted the doctor, he seemed relieved to see me. "We thought you were lost, young man," he said.

"I was," I replied. "I'm glad I found you. How is the search going?"

"This cross was nothing. Maybe the others have found something." The doctor had the original map, and he was ready to move to another location.

"Maybe the boy knows more than he reveals," Gold said. His parrot echoed him: "The boy knows. The boy knows." The parrot's voice made my spine crawl.

"I don't know anything. I was lost all morning," I protested. As I said the words, Gunn and the others raced from the trees and jumped Gold's men. The captain and the doctor quickly realized what was happening and joined the attack. When I took my eye off Gold, he struck me with his crutch. As I got to my feet, he grabbed me by the hair.

One of Gold's men pulled a pistol and started firing. He hit three of the captain's men, though the wounds were mild, and they returned fire. I tried to escape, but Gold held me tight. He just stood there like he couldn't be hit. When the firing stopped, only the captain, the doctor, Gold, and

I were still standing. All the others had been hit, including Gunn, and some were clearly dead.

"Now let's talk about the money," Gold demanded. "I'll give you young Tim, here, for a portion of the money."

"No deal, Gold," the doctor replied.

"Do what he says," I said. "I don't want to die."

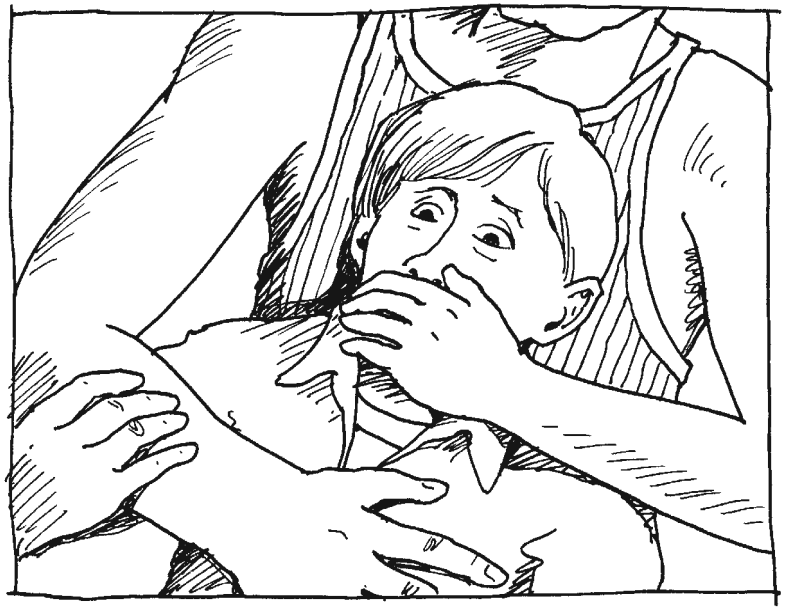
"Well, then, we have ourselves a **standoff**," Gold said. He seemed to be enjoying the tension of the situation. I was squirming and he pulled on my hair until I stood still.

I took a deep breath and **summoned** up all the courage I could find. "Gold, I'm the only one who knows where the money is hidden. If you don't let me go, you'll never get any of the money."

"Okay, boy, here's the deal. You lead us to the money, give me a fair share, and I'll let you go. My conditions are that no one tries to kill me, I keep my gun, and I am allowed to leave the island in one of the landing boats. Do we have a deal?"

"Do what he says," I said.

"We have a deal," the captain said. With the agreement, Gold tied a rope around my waist and tied the other end around his waist. He kept his gun pointed at my back.



Chapter Twelve

I led them to the **stashed** money, and we began to move the boxes out of the cave, the captain and the doctor doing most of the work. When we were nearly finished, three of Gold's men jumped us. They were wounded, but not badly.

The captain knifed one of them, and Gold shot another. The third man ran when he realized he was now outnumbered. When the conflict ended, I was standing against a tree and felt a shooting pain in my left shoulder. I looked down and saw a knife blade sticking out of my shirt and felt warm blood trickling down my arm. One of Gold's men had thrown a knife and hit me.

I screamed when the doctor pulled out the blade. It had only pinched my skin, but the pain was intense. I noticed the rope around my waist was loose, and I looked for Gold but didn't see him. Gold was gone. He must have escaped in the **commotion**. Two of the boxes of money were also missing.

After we gathered the survivors of the captain's men and helped them to the boat, we loaded the rest of the money onto the ship. We planned to send the police for Gold's men when we arrived back in Seattle.

I think we were all glad to be rid of Gold, and no one seemed too concerned that he had escaped. When we reached Seattle, we turned over the money we had to the authorities. It was much less than the total missing. We figured there was still some money that Gunn had stashed on the island. We were given a reward of $25,000, a lot less than the money we could have kept, but it was enough. There was plenty of money in my share to help my parents fix their inn.

So, that is the story of the treasure in Puget Sound. It is an unpleasant memory I have recorded, but it needed to be told. To this day, I still have nightmares. I still can hear Gold's parrot: "The boy knows. The boy knows."

Glossary

alert to warn or inform (p. 6)

civil polite and courteous (p. 5)

commandeer to assume authority and command either by right or by force (p. 15)

commotion confusion; violent, chaotic motion (p. 24)

confront to oppose directly and openly; to stand up to (p. 5)

galley the kitchen of a ship or an airplane (p. 12)

hideous horribly ugly and revolting (p. 5)

hijack to steal or seize control of a vehicle by outside force (p. 10)

marooned abandoned and left stranded in a deserted place (p. 20)

mutiny to rebel (p. 15)

perceptive observant and insightful (p. 20)

revenge to inflict harm on a person or a group in response to an earlier injury by that same person or group; returning injury for injury (p. 20)

ruthless pitiless and cruel; completely lacking morals (p. 12)

scoundrels wicked people (p. 19)

shimmering shining with a wavering, unsteady light, as in reflection off of water or metal (p. 7)

standoff a draw where both parties are equally matched and unable to proceed (p. 22)

stashed hidden away (p. 23)

summoned called upon (p. 22)

terminal the end of a transportation line, often with a station of some sort (p. 11)

voyage a relatively long journey, typically by sea (p. 6)

vulgar crude and obscene (p. 5)

Name _____

INSTRUCTIONS: Make a list of the named characters in *Treasure in the Puget Sound*. Pick two of the characters and write their names in the table below, in the boxes next to Tim Hawkins.
What words would you use to describe the three characters? Some may be words directly from the story. Other words may just come to your mind. Write at least five adjectives below each name. Two examples are already given for you.

List of Characters

_____
_____
_____
_____
_____
_____
_____
_____
_____
_____

Tim Hawkins		
curious		
wary		

TREASURE IN THE PUGET SOUND • LEVEL V • 1

SKILL: COMPREHENSION

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Name _____

Reading a-z

INSTRUCTIONS: Read the following sentences and notice that each contains a figure of speech. Write the literal meaning of the words. Then write their meaning as a figure of speech (FOS).

At least with Gold, I knew what I was **up against**.

Literal: _____

_____

FOS: _____

_____

When I **took my eye off** Gold, he struck me with his crutch.

Literal: _____

_____

FOS: _____

_____

The parrot's voice made my **spine crawl**.

Literal: _____

_____

FOS: _____

_____

Gunn figured they would **split up** to search for the money.

Literal: _____

_____

FOS: _____

_____

We **turned over** the money we had to the authorities.

Literal: _____

_____

FOS: _____

_____

TREASURE IN THE PUGET SOUND • LEVEL V • 2

SKILL: FIGURES OF SPEECH

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Pyramids

A Reading A–Z Level V Leveled Reader
Word Count: 1,911

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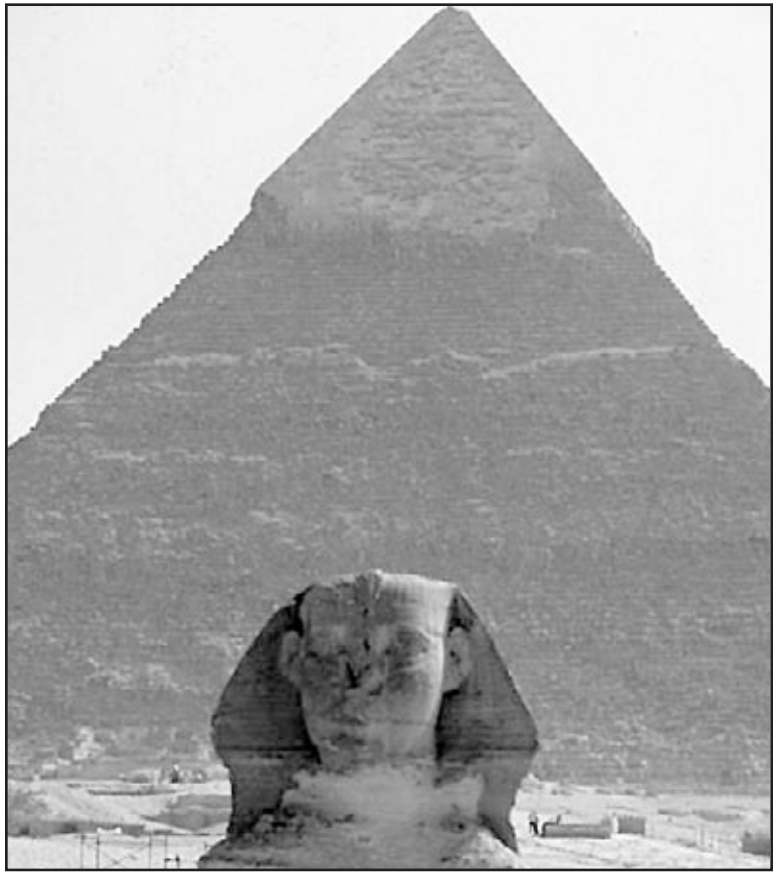
LEVELED READER • V

Pyramids

Written by Kira Freed

www.readinga-z.com

Pyramids



Written by Kira Freed

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A fanciful illustration of ancient Egypt from an old book

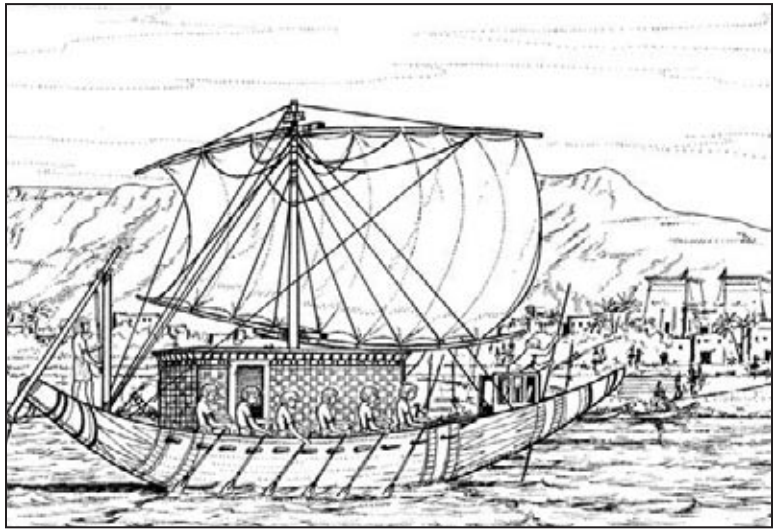
Introduction

The country of Egypt sits at the northeastern corner of the African continent. It was once home to the ancient Egyptian civilization. Ancient Egypt was one of the most fascinating cultures ever to exist. Thousands of years ago, the Egyptians studied and practiced agriculture, irrigation, architecture, engineering, and much more. They built great structures, including the pyramids. Learning about these pyramids can help us learn a great deal about this amazing civilization.

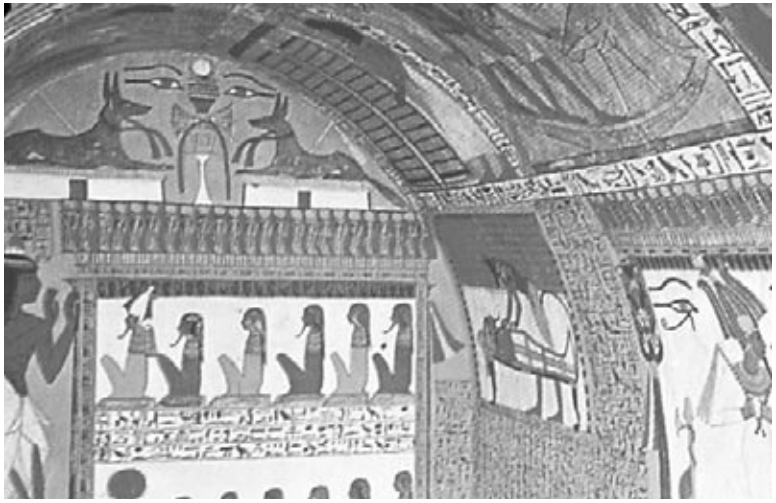
Ancient Egypt

Egyptians began to settle along the banks of the Nile River about seven thousand years ago. At first they lived in villages, but over time the villages formed into larger groups and eventually became tribes. By about 3200 B.C., these tribes were united under one king, who was called the **pharaoh**.

The culture of ancient Egypt was dependent on the life-giving Nile River. It provided the Egyptians with fish and birds to eat, as well as water to irrigate their crops. It also served as a waterway for boats, both for travel and to transport goods.



The Nile has been a busy waterway for thousands of years.

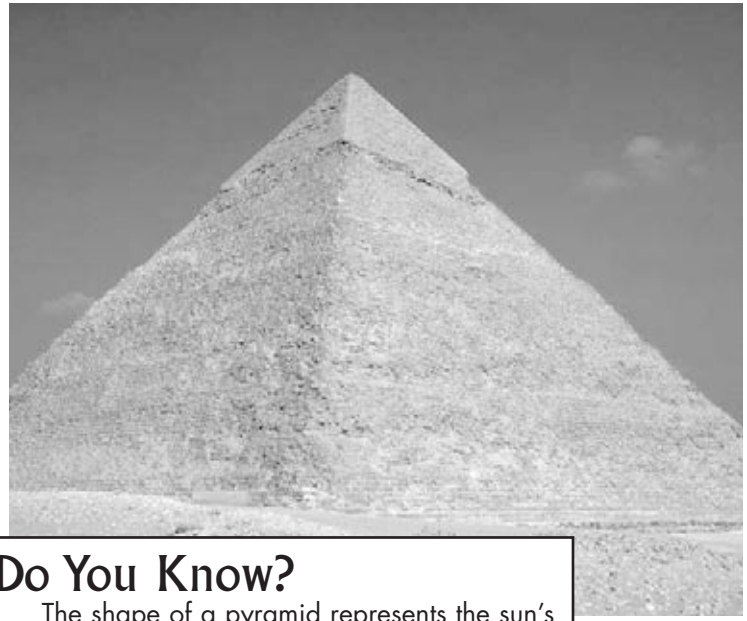


Paintings in a tomb show scenes of the next life.

The ancient Egyptians believed in life after death. They believed that their next life would be similar to their present life and that they would need the same kinds of tools and objects in their next life. Therefore, many people were buried with a collection of some of the things they possessed in their current life. Of all the people living in ancient Egypt, no one was given a more **lavish** burial than a pharaoh.

According to the beliefs of the ancient Egyptians, the pharaoh was the son of the sun god, Re. While he was alive on Earth, the pharaoh was known as Horus. After he died, he was united with Re. The new pharaoh, who replaced the dead pharaoh, became the new Horus.

The Egyptians believed that in order for a pharaoh to live forever and continue to bless their lives, his body had to be preserved so that his spirit would stay alive. They built pyramids to honor pharaohs who had died. Each pyramid held a pharaoh's body, as well as riches and treasures meant to accompany him in the next life. The pyramid also protected the pharaoh's tomb and its treasures from theft. In addition, it served as a monument to the pharaoh's greatness.

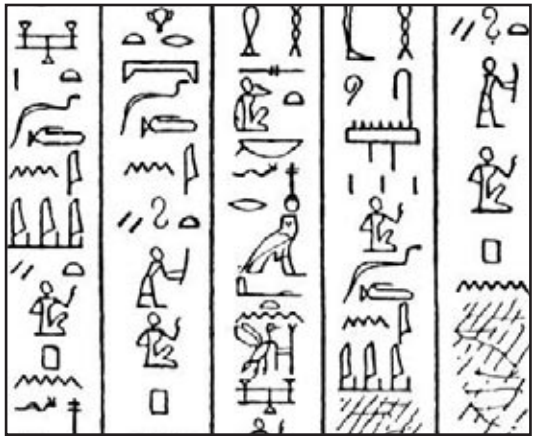


Do You Know?

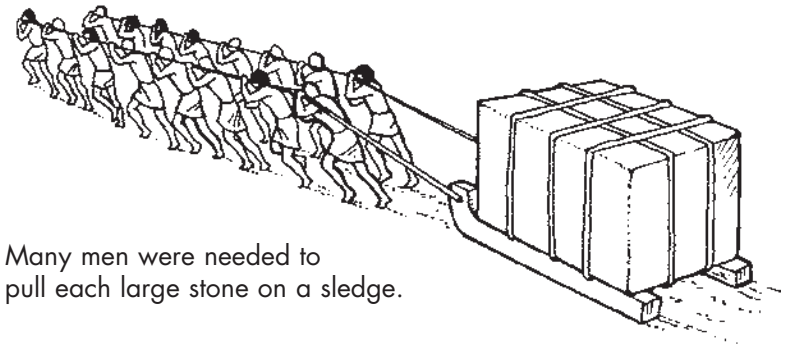
The shape of a pyramid represents the sun's rays shining on the Earth. Ancient Egyptians believed that a pharaoh who died ascended to heaven on the rays of the sun.

Building a Pyramid

A pharaoh planned the construction of his pyramid long before he was expected to die, since finishing it would take many years. A large pyramid could take as long as twenty years to complete. Building a pyramid required thousands of people. Some were skilled workers, such as architects who designed the overall structure on orders from the pharaoh. People with special knowledge were also required to properly remove the stone from a **quarry** and to shape the stone. After a pyramid was built, skilled sculptors and painters decorated it. A **scribe** recorded all the materials needed for building the pyramid using the ancient Egyptian writing system, called **hieroglyphics**. Hieroglyphics consist of a series of small pictures that represent ideas.



Samples of hieroglyphics

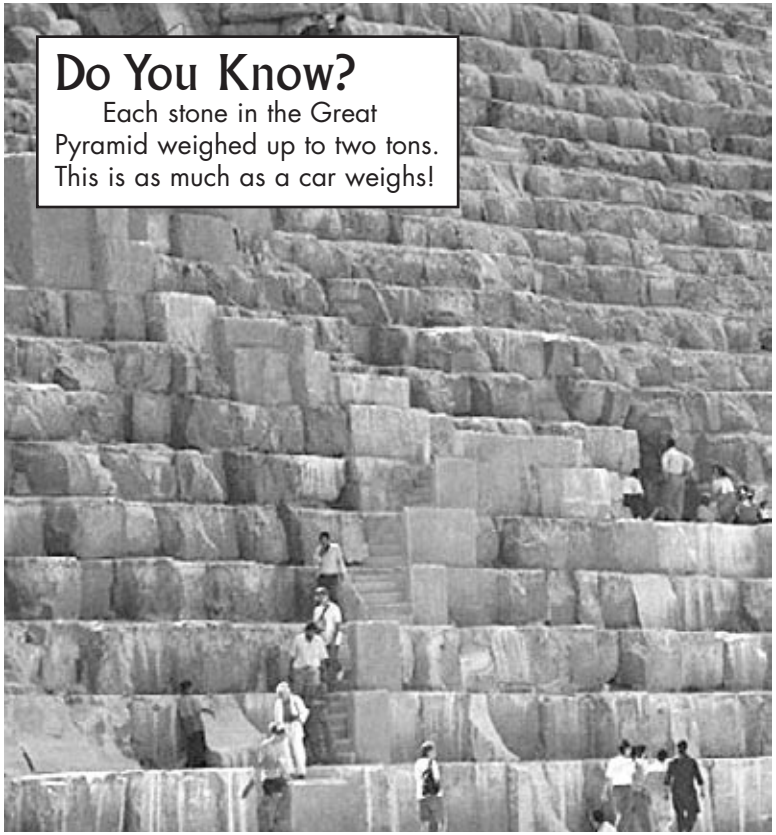


Many men were needed to pull each large stone on a sledge.

In addition to these specialized tasks, other workers were required to move the heavy stones. They moved some stones from the quarry to the building site by boat. Other stones were put on sledges, or large wooden sleds, which were then dragged across the desert sands.

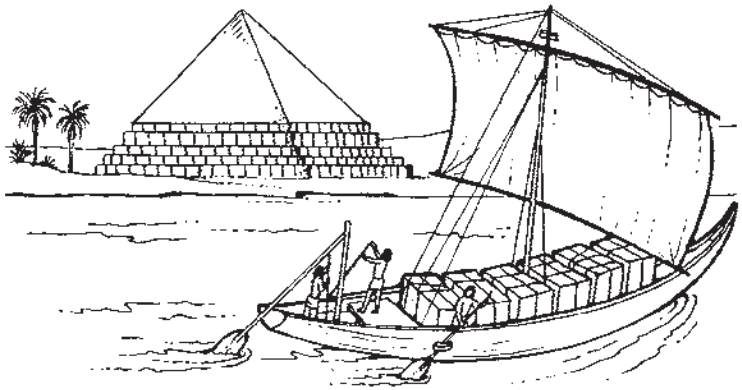
Until recently, historians believed that much of this difficult work was forced on laborers who served as slaves. They included prisoners and people who owed money to the pharaoh. But in 1990, a tourist traveling in Egypt stumbled on the remains of an ancient city where workers who helped build the pyramids of Giza were once believed to have lived. Evidence from the city suggests that the people who built those pyramids were not slaves, but rather skilled craftsmen—about 15,000 of them. Written records suggest that the workers were treated well while they worked on the pyramids.

It is believed that farmers also participated in the building of pyramids, especially during the flood season when they could not farm. Farmers depended on floods to deposit fertile soil for crops. Because the pharaoh was believed to be the son of a god, farmers thought he was able to guarantee good floods. They were glad to serve the pharaoh in exchange for the fertile soil brought by the floods.



Do You Know?

Each stone in the Great Pyramid weighed up to two tons. This is as much as a car weighs!



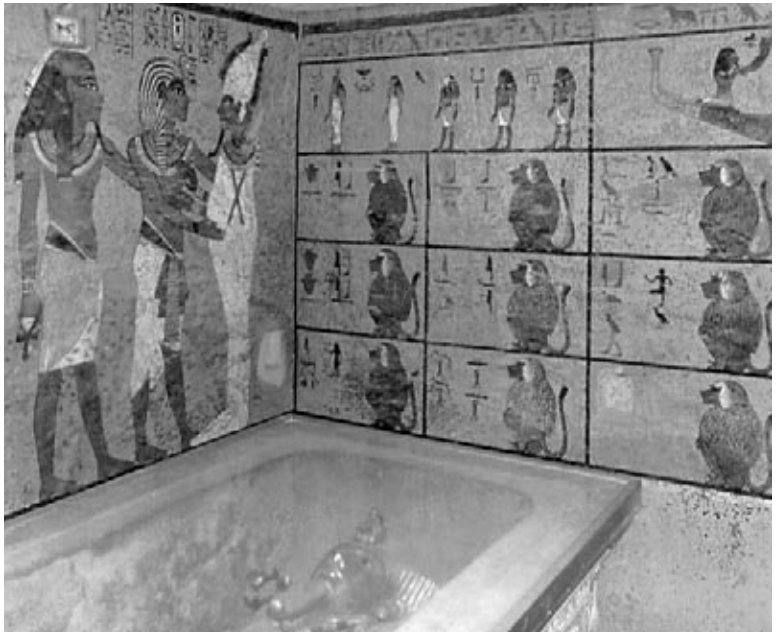
The Egyptians sailed heavy stones down the Nile River.

The location of a pyramid had to be determined very carefully. The site needed to be on rocky ground to support the immense weight of the finished pyramid. It needed to be near the Nile River so that some of the stones could be transported by water from the quarry to the building site. The site had to be located on the west bank of the Nile because the west was where the sun set each night and where the dead were believed to exist.

The exact position of the pyramid also needed to be determined carefully, since the sides had to face exact north, south, east, and west. An astronomer-priest was summoned to observe the stars in order to determine true north. During the actual building of a pyramid, many ceremonies were performed to ensure the support of the gods in the **endeavor**.

Several kinds of stone were used in the building of a pyramid. The core of the pyramid was made from local limestone. Other limestone of finer quality, brought from far away, was used to make the outer shell of the pyramid. Granite from even farther away was used for the pharaoh's coffin, called a **sarcophagus**, as well as to decorate the burial chamber.

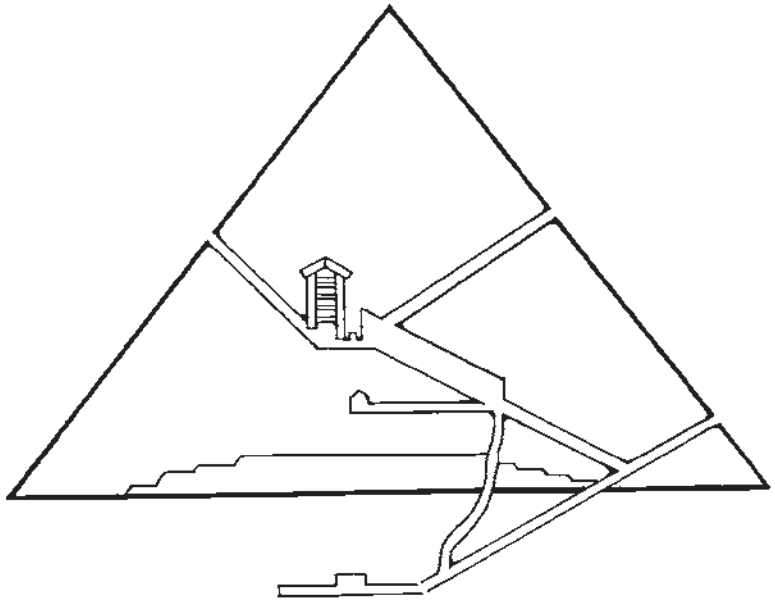
After the location and position of the pyramid were decided on, the surface of the ground was leveled. After leveling the ground, the workers began the actual labor of building the pyramid.



The tomb of King Tutankhamen (King Tut)

The internal structure of a pyramid was designed to outsmart thieves and keep them from the burial chamber and its treasures. If the burial chamber was at or below ground level, it was put in place first, and then the pyramid was built around it in horizontal layers. Ramps were built against the sides of the pyramid, and the huge stones were dragged up the ramps and put in position.

A series of passageways and rooms included dead ends and empty chambers to confuse anyone trying to loot the tomb. Enormous slabs of stone blocked the entrance to the real tomb.

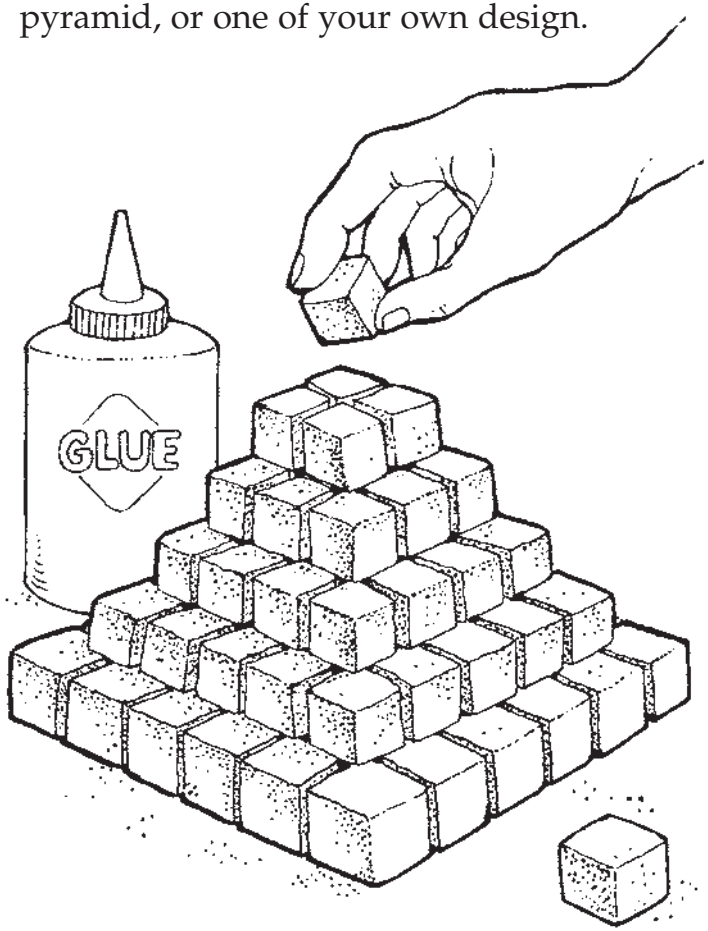


Drawing of the tunnels and passageways in a pyramid

TRY THIS!

Build a Pyramid

Using sugar cubes or cubes fashioned out of clay, build a model pyramid. You can build a pyramid with steps, a flat-sided pyramid, or one of your own design.



Preparing the Body

The ancient Egyptians had a special procedure for preparing the body of an important person for burial. This technique, called **mummification**, preserved the body for thousands of years. The body was taken to an **embalmer**, who removed the insides and preserved them in canopic jars. Each jar had a lid in the shape of a guardian god. The body then was left to dry for forty days. Then it was washed, rubbed with oil and fragrant spices, and packed with preservatives. Afterward, it was wrapped with many layers of linen soaked in resin to hold its shape. A decorative mask was placed on the head, and the entire body was placed in a coffin. Coffins were ornately painted.

This mummy was damaged by thieves looking for souvenirs.

An elaborate ceremony marked the burial of a pharaoh. The decorated coffin, plus the canopic jars, were carried to the pyramid. A procession of mourners was led by priests and priestesses. Following the mourners were servants who carried all the items meant to accompany the pharaoh into the next life—food, clothes, furniture, and more. Before burying the dead pharaoh, the body's mouth was opened by a priest. This practice was believed to allow the person to breathe, eat, and speak in the next life. Then the coffin was placed in the tomb and sealed inside the pyramid, in a chamber designed to keep it safe.

A collection of shabtis

Do You Know?

Pharaohs were buried with statues of their servants. These statues, called shabtis, were believed to come to life in the next world so that the servant could once again serve the pharaoh.

Famous Egyptian Pyramids

The first pyramid, built for King Zoser at Saqqâra, is called a step pyramid because it was shaped like giant stairways up the sides. Later pyramids had smaller steps. The design eventually changed into straight-sided pyramids, such as the Great Pyramid at Giza, which was built about 4,500 years ago for King Khufu. The Great Pyramid is 147 meters (482 ft.) tall and contains about 2,300,000 blocks of stone.

The Sphinx watches over the pyramids and other structures at Giza.

The Great Pyramid at Giza is part of a complex of pyramids built by King Khufu, his son Khafre, and grandson Menkaure. Their pyramids are surrounded by other pyramids for their queens, as well as stone **mastabas**—tombs made of mud bricks—for the rest of the royal family and members of the court. The Sphinx, a limestone statue with the face of a king and the body of a lion, guards the entire site. The Sphinx represents the sun god.

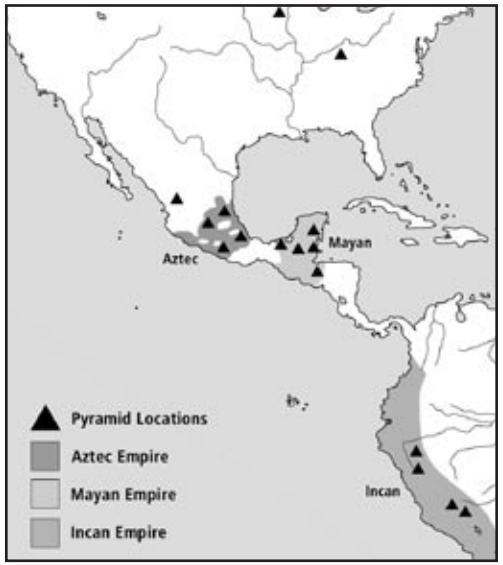
All of the ancient Egyptian pyramids have had their treasures looted. Very few tombs have been left undisturbed. The only intact burial of an Egyptian king ever found is that of King Tutankhamen. His tomb, in the Valley of the Kings in Egypt, was built underground, rather than inside a pyramid. Because it was found intact, it has helped archaeologists to learn a great deal about the culture of ancient Egypt.

Archaeologist Howard Carter (left) examines the coffin of King Tutankhamen, which he discovered in 1922.

Pyramids in Other Lands

Pyramids were also built in the Americas. They were first built in Central America and in northwestern South America, but soon the practice of building pyramids spread to North America as well. Several of the New World cultures that built pyramids are mentioned below.

The Mayan people and other cultures in Central America built stepped pyramids. These pyramids had stairways decorated with sculptures and inscriptions that led to temples at the top. Sometimes, but not always, these pyramids contained the tombs of kings. One of the most famous Mayan pyramids is Chichén Itzá. Rebuilt over an earlier pyramid, the current one was built just before A.D. 1100. The earlier one, built 100 years before,



Locations of pyramids in the New World

Chichén Itzá, the most famous Mayan pyramid

contained a stone sculpture of a jaguar that was painted red and had eyes made of jade. The jaguar, a Mayan symbol of the Earth's fertility, was worshipped as a god.

The Aztecs, another Central American culture, built the Great Pyramid Temple, most likely in the 1300s, in their capital city of Tenochtitlán, on an island in Lake Texcoco in southcentral Mexico. The Aztecs believed that the sun god needed blood from human hearts to stay strong. Without human blood, the sun would die and the world would come to an end. Human sacrifices of prisoners taken in war were a regular part of Aztec life, and these sacrifices took place at the Great Pyramid Temple.

Cultures in northwestern South America also built flat-topped, stepped pyramids. The Moche people, who flourished between 100 B.C. and A.D. 800, built the Pyramid of the Sun and the Pyramid of the Moon. About 600 to 700 years later, the Inca people built pyramids. The Temple of the Sun was the most sacred shrine in the Incan empire. It contained a huge gold disk that symbolized the sun god. The Incas believed that their rulers were direct descendants of the sun.

The pyramid shape has been used in building designs in other cultures around the world. Pyramid designs can be found in parts of Europe, Asia, and the Middle East. The pyramid shape is used in modern architecture in many countries, including France, England, and the United States. A modern pyramid was built in Egypt to honor President Anwar Sadat, who was assassinated in 1981.

Pyramid Sports and Entertainment Center, Memphis, Tennessee

Conclusion

Efforts are being made to preserve and protect the pyramids of ancient Egypt, as well as pyramids in other parts of the world. Pollution, urban expansion, tourism, and other problems threaten the pyramids at Giza. The Great Pyramid of Khufu at Giza is the only one of the famous "Seven Wonders of the Ancient World" that still stands.

Camel rides were outlawed at Giza in 1998 so that visitors could view the famous site with fewer distractions.

All of the pyramids and tombs are wonders worthy of preservation. By studying pyramids, we learn about complex and fascinating ancient cultures and the accomplishments of humans who lived during those times. We also learn how ancient cultures honored their leaders and worshiped their gods.

Explore More

❶ In the address window, type: *www.google.com*

❷ Then type: *pyramids*. Click on "Google Search."

- Read the colored links. Click on one that looks interesting.
- To explore other links, click the "back" arrow on the top left until you get back to the page with the links that Google found.
- Then try searching using other words from this Leveled Reader, such as: *mummy, Giza, Egypt, Nile River, hieroglyphics,* or *Great Pyramid Temple.*

Glossary

embalmer *(n.)*	a person who treats a dead body with chemicals to keep it from decaying rapidly (p. 15)
endeavor *(n.)*	an earnest attempt or effort (p. 11)
hieroglyphics *(n.)*	a picture or symbol representing a word, syllable, or sound, used by the ancient Egyptians and others instead of alphabetical letters (p. 8)
lavish *(adj.)*	extravagant; very generous (p. 6)
mastaba *(n.)*	an oblong structure with a flat roof and sloping sides, built over the opening of a mummy chamber or burial pit in ancient Egypt and used as a tomb (p. 17)
mummification *(n.)*	the process of preserving a dead body that was practiced in ancient Egypt (p. 15)
pharaoh *(n.)*	the title given to kings in ancient Egypt (p. 5)
quarry *(n.)*	a place where building stone, marble, or slate is excavated (p. 8)
sarcophagus *(n.)*	a limestone coffin or tomb, often inscribed and elaborately ornamented (p. 12)
scribe *(n.)*	a professional penman who recorded information (p. 8)

Name _____

Reading a-z

INSTRUCTIONS: Write a summary of each chapter. Use two to four sentences for each chapter to restate the main idea.

Introduction	
Ancient Egypt	
Building a Pyramid	
Preparing the Body	
Famous Egyptian Pyramids	
Pyramids in Other Lands	
Conclusion	

PYRAMIDS • LEVEL V • 1

SKILL: COMPREHENSION

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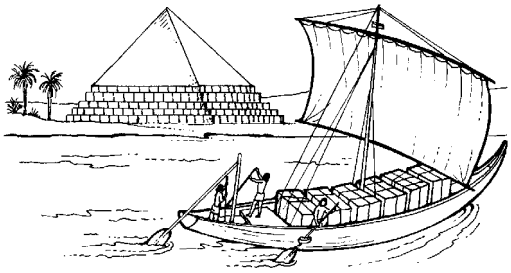
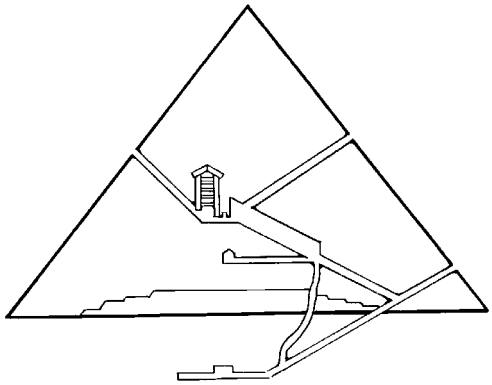
Name _____

INSTRUCTIONS: Read through the text of *Pyramids* and record all of the time-order words that you can find. An example of a time-order word is shown here. Write any additional time-order words you can think of at the bottom of your list. Now, write a paragraph using five time-order words.

Time-order Words

beginning





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The Case of the Vanishing Anasazi

A Reading A–Z Level V Leveled Reader
Word Count: 3,127

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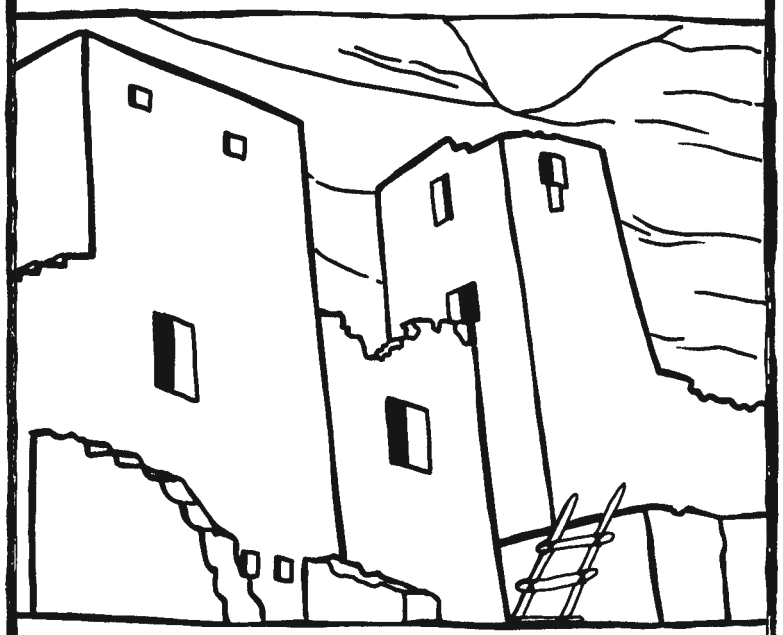
The Case of the Vanishing Anasazi



Written by David Meissner
Illustrated by Maria Voris

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Note on terminology:

The National Park Service and many archaeologists today no longer use the term "Anasazi" to refer to the ancient Colorado cliff-dwellers. "Anasazi" translates as "ancestral enemy" in Navajo, and many Southwestern tribes descended from the Anasazi prefer to call their ancestors by their own tribal name and in their own language. The Park Service has settled on the more general term "Ancestral Puebloans."

Many historians retain the term "Anasazi" for the sake of familiarity and specificity, as "Ancestral Puebloan" may refer to any of the Pueblo people's ancestors. For the same reasons, along with the wish to preserve the author's intentions, we at Reading A–Z have also chosen to keep the term "Anasazi" in our Leveled Readers. Our sincerest apologies to those who prefer another name; we welcome your feedback.

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Correlation

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Chapter 1: Another Mystery

Stanley DeCapers peered down into his black detective's bag. His skinny fingers shuffled past the magnifying glass, Sherlock Holmes hat, and detective's notebook. If those weren't enough, he also had the fake passport, stick-on mustache, and decoder ring. Stanley closed his bag and nodded confidently. He had enough for this job.

Mr. Rhodes's voice still blared from the bus's overhead speakers, "... that is the biggest mystery of the Anasazi people. Why did these **Native Americans** suddenly leave their homes? Was it war, or disease, or **drought**? Scientists still aren't sure. In 30 minutes, at Mesa Verde National Park, we'll have the chance to look around ourselves.

"After our tour of Cliff Palace, we'll visit the museum. I want you to behave like mature fourth graders. Please follow the park ranger's instructions."

"Cliff Palace," murmured Stanley under his breath, "that's got to be where the clues are."

Uh-oh, Ricky thought to himself. *He's going to try to solve another mystery.*

Ricky wondered how he could put this delicately. "Stanley," he said at last, "You've solved twenty-two mysteries, including the case of the missing pencil sharpener. But you heard Mr. Rhodes. Scientists haven't even figured it out! It's been 700 years since the Anasazi vanished. That's way before Christopher Columbus!"

Stanley gave his friend a **disapproving** look through his thick glasses. Then without saying a word, he turned and stared out the bus window. Stanley's thoughts wandered with the passing Colorado landscape. These steep mountains, flat **mesas**, and pine trees were the same places the Anasazi knew.

"Stanley!" Ricky said, snapping his fingers in front of his friend's face. "I know you got a good deal on your Super-Sleuth Kit: only $19.95 for the mustache, magnifying glass, and decoder ring. But the kid in the commercial isn't real. I mean, flying to Paris, finding the missing painting, and getting the reward . . . that's not how it happens."

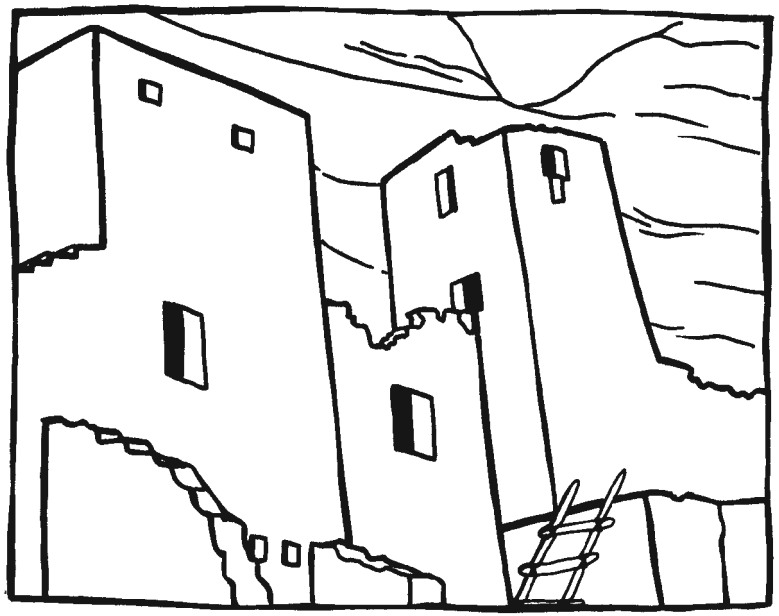
Stanley looked his friend in the eye. "Ricky, this is important to me. Just cover me this time. That's all I'm asking."

"But remember what happened on the last field trip!" Ricky protested.

"I'll tell you the plan when we get there. And by the way, on the last field trip I solved the mystery."

"But we almost got caught," Ricky warned. "This time I might not be there to bail you out."

Stanley smiled his mysterious super-sleuth smile. Then he put on his decoder ring and stared out the window again. They were in Anasazi land.



Chapter 2: Ancient Clues

Cliff Palace was more awesome than Stanley ever could have expected. The young detective stood speechless, looking at the ancient city built into the side of the cliff. Under a huge rock overhang were steps and walls and houses. Some rooms were even stacked up four stories high.

"How is everybody doing today?" asked a man who wore a gray park uniform and had a red mustache. "My name is Ranger John. I work for the National Park Service. Here at Mesa Verde we protect the Anasazi **ruins** so that you and people 100 years from now can visit them.

"But before we begin, you'll need to follow some rules. Don't touch the walls, don't carve your initials into the sandstone, and don't enter restricted areas. After a 30-minute tour of Cliff Palace, we'll head over to the museum."

Mr. Rhodes's fourth grade class followed Ranger John through the ruins. He explained how the Anasazi people grew corn, beans, and squash nearby. They also hunted animals and made pottery with black and red designs. The tour stopped at the edge of a big circular room that was sunken into the ground. The class looked down at the sandstone bricks and dirt floor with two holes in the ground.

"This is a **kiva**," Ranger John explained. "It's where the Anasazi used to tell stories, sing, pray for rain, and hold ceremonies. The big hole in the ground was their fire pit."

"What about the smaller hole?" Stanley asked.

"That's called a **sipapu**," Ranger John answered. "They believed it was the entrance to the spirit world."

At the end of the tour, Ranger John hinted at the mystery of the Anasazi. "So after farming this beautiful land for years, the Anasazi vanished. We don't know why. They left clothing on pegs

and pottery on the ground, as if they expected to return. At the museum, you can see pottery and baskets as well as photographs from the rest of the park."

On the way to the museum, Stanley jotted down clues in his Super-Sleuth notebook.

Super-Sleuth Notes

Detective: Stanley DeCapers—Case #23

Mystery: Why did the Anasazi vanish?

Clue #1: Clothes on pegs

Clue #2: Pottery on ground

Clue #3: Hole in kiva goes into spirit world

Special Notes:

Ranger John has suspicious red mustache.

At the museum, Stanley's magnifying glass led him to some photographs of Anasazi **petroglyphs**. Animals, handprints, and human figures were carved into the rock walls.

"Hey, Ranger John, are these nearby?" Stanley asked as he pointed to the photograph.

"They're really amazing petroglyphs," said Ranger John as he walked over. "But your class won't have time to visit them. It's over a mile from here, on the trail to Petroglyph Point."

Stanley nodded his head. "Thanks. That's all I needed to know."

Stanley found Ricky near the pottery. He stood next to him and talked out of the corner of his mouth. "The clues are over near Petroglyph Point. But first I will need the blessings of the Anasazi gods. I'll do that back at the Cliff Palace kiva."

Ricky rolled his eyes. "Stanley," he said in an irritated whisper, "I'm not going to cover for you again. Last time you promised that—"

"But this is the case of the vanishing Anasazi. It's vital to understanding past civilizations. This could determine the future of the human race!"

Ricky laughed out loud. "Stanley, you've been watching way too much TV."

"Okay, so here's the plan," Stanley continued. "I'm going to sneak off into the bushes. You stack my pillow up against the window and put my jacket over it. When Mr. Rhodes comes by for the head count, tell him I'm sleeping."

"Stanley, that's never going to work," Ricky complained. "But I'll try, since you're going to do it anyway. If he catches us, it's all your fault."

"Great," Stanley replied, as he rubbed his plastic decoder ring.

Chapter 3: Cliff Palace at Night

From under the bushes, Stanley DeCapers watched the bus speed off into the Colorado dusk. He wasn't quite sure how he would catch up with his class, but it was a risk he had to take. "It's not every day you have the chance to do something great for humanity," Stanley murmured to himself.

When the bus was out of sight, Stanley pulled himself out of the dirt and removed the **camouflage** branches from his detective's hat. Moments later, the museum lights turned off. Stanley looked up at the fading blue sky and smiled.

According to his park map, Cliff Palace was down the road and on the other side of the canyon. Stanley estimated that Cliff Palace would be at least an hour away. Bright stars soon filled the night sky, and then heavy clouds began to blanket the western horizon.

Stanley's flashlight was dim by the time he reached the ancient ruins. Luckily the full moon had just risen above the clouds and bathed Cliff Palace in a soft, glowing light. The young detective stared again with his mouth wide open—until he heard the first coyote howl.

Stanley quickly scrambled into the ruins and hurried up a set of stairs. After taking a deep breath, he began to explore the sandstone walls in the courtyard. He shined his flashlight through the magnifying glass and looked for clues. He could make out grains of sand that must have been hand-packed hundreds of years earlier.

Before his batteries died, Stanley found the place he had come to see: the sunken kiva. He climbed down into the room and circled around the perimeter for good luck. Then he sat down in front of the smaller of the two holes. To help **summon** ancient Anasazi spirits, Stanley dropped his decoder ring down the sipapu as a sacrifice.

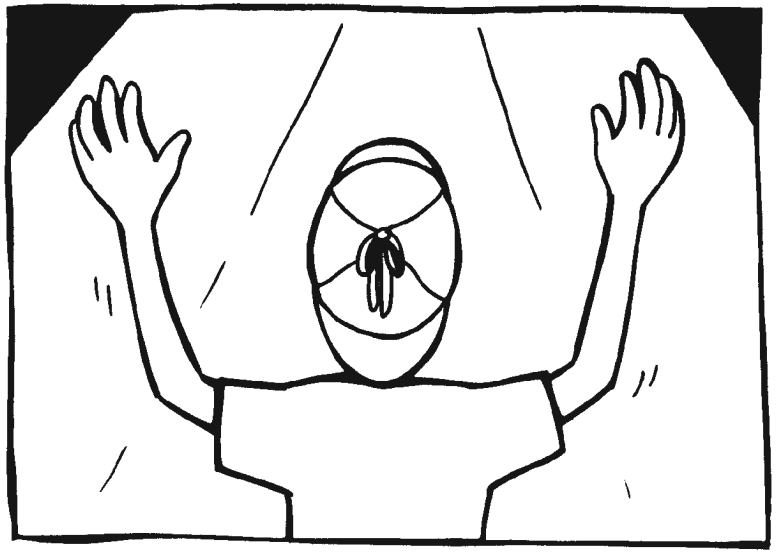
Then, in a low, vibrating voice, in a tone that made Stanley himself raise his eyebrows, he began to chant,

"Oh, Anasazi, where are you?
Why did you leave, where are you?
Oh Anasazi, you left your home
in such a rush
please come back
and tell me why!"

As Stanley chanted his invitation over and over, clouds rolled in front of the moonlight and rain softened the ground outside of the rocky overhang. The louder the rain poured, the louder Stanley chanted. His voice echoed throughout the kiva. Then Stanley danced around the holes, flapping his arms like a chicken to ward off any evil spirits. Finally out of breath, he sat down again near the small hole and crossed his legs.

Stanley closed his eyes and squeezed his brain with all of his forehead muscles. His glasses seemed to burrow down into his nose. A sound from outside of him began in the distance and grew louder and louder. Its hum sounded like the return of an Anasazi god.

Through his eyelids, Stanley could sense a light growing closer and closer. It shone upon him so brightly that his eyes almost hurt. That's when he heard a voice.



Chapter 4: Protected Ground

"What are you doing here?" asked the voice in an accusatory tone.

"I, Detective DeCapers, have come to help your people. It is safe to return. We will bring back your pots from the museum, and you can live as before. We want to learn from you."

"Stand up," ordered the voice. "Enough playing around."

Stanley slowly stood up and raised his arms to the light. "Let's indeed stop playing. Your clues have led me here. Now, for the sake of humanity, tell me why you disappeared."

"Hey little boy," said the voice, "stop talking nonsense and open your eyes. You're not allowed to be here when the park is closed."

Stanley opened his eyes and saw a park security guard standing at the edge of the kiva, shining a flashlight down on him. The man had brown skin and long black hair. He studied Stanley's eyes with a quizzical look on his face. Stanley looked down and blushed.

"You know the park's closed," continued the man. "And it's the law that you can't just climb in here. This land is protected."

"I just wanted to solve the mystery of the vanishing Anasazi," replied the young detective, holding up his magnifying glass. "They left pottery on the ground like they were coming back."

The security guard realized that this boy was serious. "There's even more pottery still buried underground," he responded. "And this park is here to protect it." Then the man slowly pointed his unusually long thumb toward the sky and said, "There are some mysteries that the sky will never reveal."

"So what's your name?" Stanley finally asked.

"You can call me Jake the Security Guard."

"Well it's nice to meet you, Jake. My name is DeCapers, Stanley DeCapers."

A break in the clouds allowed the moon to shine down on the ruins. Shadows from ancient walls spread across half of the kiva. Jake's face was half shadow, half moonlight. "We need to go," he said in a flat tone. "I'll take you back to the museum."

Stanley nodded his head, realizing that this adventure was over. "Just give me one second and I'll go with you," he said, before running over to the sipapu. Stanley quickly knelt down and fished his decoder ring out of the hole.

When he slipped the ring back on his finger, the codes were no longer the same. Anasazi symbols, like the petroglyphs he had seen in the photograph, were now on his decoder ring! A chill ran down Stanley's spine. "Wait for me, Jake!" he yelled and raced toward the truck.

Jake's old pickup truck rumbled along the road toward the museum. Stanley tried to explain the magical transformation of his decoder ring, but Jake didn't seem to care. "You just need to get some sleep, that's all. You can rest near the museum. It'll be light in a few hours."

Stanley stared at his ring and rotated the dial. There were symbols of people, animals, and handprints. "I've got it!" the detective suddenly exclaimed. "Petroglyph Point! That's where we need to go. That's where the clues are."

"You just need to get some sleep," Jake repeated, while studying Stanley's earnest face. "Some mysteries are better left unsolved."

"But this is more than just a mystery to me," Stanley pleaded. "We can learn from what happened to the Anasazi. I think it will help future civilizations."

The two drove in silence for a few minutes. Then Jake jerked the truck onto a side road and parked under a pine tree. When the engine was still and only faded moonlight entered the cab, Jake looked over at Stanley. "Grab your flashlight, my friend. This is the trail to the petroglyphs." Stanley smiled and followed this unusual security guard down the dimly lit path.

Chapter 5: Anasazi Blood

"Those are them," Jake said as he shined his light on the rock face next to the trail. "It's the Anasazi art you're looking for." Jake handed his bright flashlight to Stanley and stepped back into the shadows.

Stanley's jaw dropped again as his beam of light slowly traced over the petroglyphs. Spiraling circles, large creatures, a big-horned sheep, and handprints decorated the rock. A person had carved these over 700 years ago! Stanley tried to picture this Anasazi artist, chiseling away one spring afternoon.

The spiraling circle on the decoder ring corresponded to the letter *e.* The large creature was a decoded *k.* And the big-horned sheep became an *a.* When Stanley turned the dial to decode the handprint, his ring got stuck. Stanley took a deep breath and tried to force the dial with all his might. The mystery was at his fingertips.

"You're probably trying too hard," Jake said.

Stanley stopped forcing the ring and stared at the handprint, his final clue. The hand's four fingers stretched up smoothly to the right. To the left, an unusually large thumb extended out, longer than any fingers. A bead of sweat formed on Stanley's brow, just like it always did when he was about to solve a mystery. Stanley gently pressed the dial, and it spun to the letter *J.*

"I knew it," Stanley said as he slowly turned around. "You have the same long thumb. J – A – K – E. So what kind of security guard are you?"

Jake's face bowed down before the beam from his flashlight. Then his brown eyes looked up as if they wanted to talk. "All right," he finally said. "You are a greater detective than I thought. You are one who cares to know, and I will tell you.

"My **blood** is Anasazi blood. My thumb is an Anasazi thumb. Many years ago, my people

left this place. They followed the river to the south and the east. They left these cliff dwellings behind and began a new life. Today they are in land that you call New Mexico. My people are the Pueblo people, **descendants** of the Anasazi."

Stanley nodded his head in understanding. "So the Anasazi didn't just disappear into thin air. Some people left to start a new life. And you've come back to watch over your **ancestors**' lands."

"You could say that," Jake said in a way that didn't reveal any more information.

Stanley knew he had to try his final question. "So why did you, or, why did they leave? Were there attackers? Or did the rain not fall?"

Jake looked up at the sky as clouds swept across the moon. "The sun will be rising soon. It's better if we leave, like my people did. There are some mysteries that the sky will never reveal. And sometimes you don't need a logical reason to start a new life."

Stanley handed back Jake's flashlight and followed him along the dark trail. Jake's truck dropped Stanley off at the museum entrance and continued out through the park's exit.

Stanley felt a tap on his shoulder hours later.

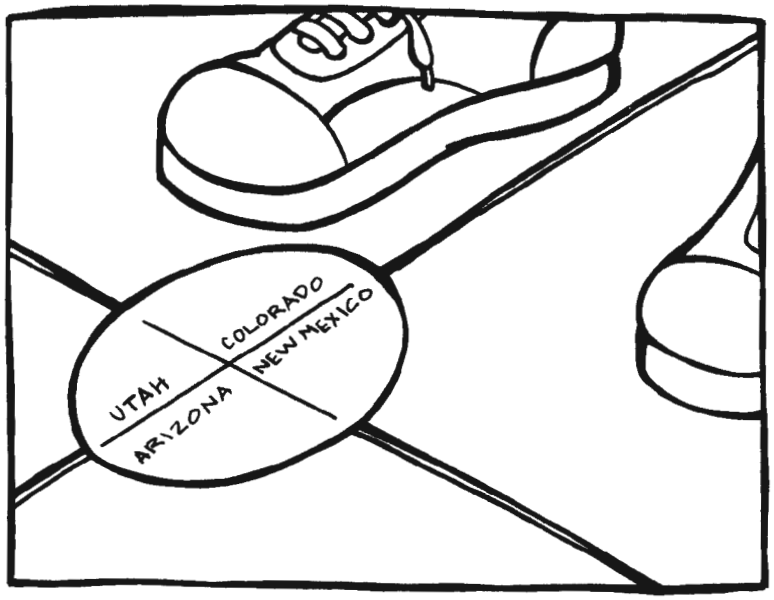
"Hey, aren't you part of that fourth grade class from Arizona?" he heard a familiar voice asking.

Stanley rubbed his groggy eyes and slid on his thick glasses. "Hey! Ranger John! What are you doing here?"

"The museum opens in one hour. You'd better have a good story for why you slept outside this door last night."

Stanley looked over at the early morning sky. The clouds were gone. "Do you know Jake the Security Guard?" Stanley asked Ranger John.

John furrowed his brow. "No. We don't have any security guards named Jake."



Chapter 6: The Four Corners

It was mid-morning as Mr. Rhodes's class took pictures at the Four Corners monument. Students hopped across state lines and took pictures while standing in Colorado, New Mexico, Arizona, and Utah all at once.

Ricky laid down over the lines and flapped his arms like a snow angel. Jimmy Evans laughed while he took pictures. When Ricky got up and brushed himself off, he almost fell over again. Due east, straddling the Colorado-New Mexico border, was Stanley DeCapers.

"Stanley! What are you doing here?"

Stanley took Ricky by the arm and walked into New Mexico. "Shhhh! I'm part of your class, remember? So did Mr. Rhodes find out?"

"Nope, he thought you were sleeping both times. How'd you get back?"

"Ranger John gave me a lift."

"And did you find out what happened to the Anasazi?" Ricky asked with a smile.

Stanley thought about it for a moment and replied, "No, not really. There are some mysteries that the sky will never reveal." Stanley pointed south, further into New Mexico. "Some of them did move and settle in other areas, like the Pueblo people. So in a way, the Anasazi haven't vanished. They still live on."

Back on the bus Mr. Rhodes passed by Stanley's and Ricky's seat for the head count. "Good morning, Mr. DeCapers," Mr. Rhodes said with a smile. "Did you have a nice rest?"

"I'm still a little sleepy. I've been catching up on lost time."

"Well, sleep fast, because later today we'll be at Meteor Crater. That's where a huge meteorite hit the earth 50,000 years ago."

"Will we get to see the actual meteorite?" Stanley asked, looking down at his decoder ring.

"No, not exactly," answered Mr. Rhodes. "Nobody has really seen the meteorite itself. They believe that it **disintegrated** upon impact."

Stanley smiled when he saw that his decoder ring had turned back to normal. For the rest of the way he looked out the window at the blue sky. On three separate occasions Stanley was sure he had seen falling meteorites. But each time Ricky pointed out that they were only birds.

Glossary

ancestors	family members from long ago (p. 21)
blood	a family relationship (p. 20)
camouflage	disguised to blend in with surroundings (p. 11)
descendants	the offspring and children of a particular person or group (p. 21)
disapproving	not accepting; not in agreement with (p. 5)
disintegrated	broken up into very small parts (p. 25)
drought	a long period of time with unusually low rainfall (p. 4)
kiva	an underground room used by the Anasazi for ceremonies (p. 8)
mesas	flat-topped hills with steep sides (p. 5)
Native Americans	people who lived in the Americas before Europeans arrived (p. 4)
petroglyphs	rock carvings (p. 9)
ruins	the remains of old buildings (p. 7)
sipapu	sacred hole connecting to the spirit world (p. 8)
summon	to call someone to you (p. 12)

Name _____

Reading a-z

INSTRUCTIONS: Fill out the outline below with the information from *The Case of the Vanishing Anasazi*.

Characters	Setting

Mystery (Problem to be Solved)

Clues that Helped Solve the Mystery

Red Herrings (Clues that Didn't Help Solve the Mystery)

Solution

THE CASE OF THE VANISHING ANASAZI • LEVEL V • 1

SKILL: COMPREHENSION

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Name _____ Reading a-z

INSTRUCTIONS: Read the sentences to figure out the meanings of the bold-faced words. Then explain what each word means and how you figured out the meaning of the word.

Sentences	Word Meaning	How did you figure it out?
The cat looked at me with **disdain**. It seemed to think that I was a silly animal.		
We reached the **summit** at noon. From the highest point on the hill, we could see for miles.		
The child was a **genius** and was far smarter than anyone else in the family.		
Like other birds of prey, the **osprey** has extremely sharp eyesight.		
The **dromedary** had long, lean legs, a long neck, one hump on its back, and long eyelashes to protect its eyes from sand in a windstorm.		
The man waited in the **foyer**, and like a lot of entrance halls, it was cold.		
The writing was **permanent** and would last forever.		

THE CASE OF THE VANISHING ANASAZI • LEVEL V • 2

SKILL: CONTEXT CLUES

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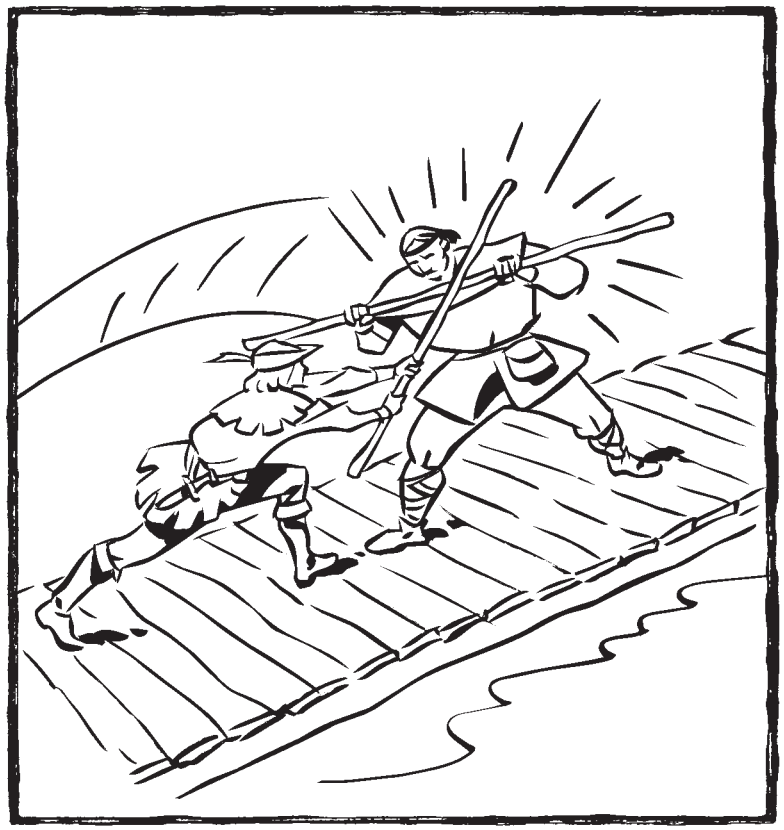
How Little John Joined Robin Hood

A Reading A–Z Level V Leveled Reader
Word Count: 1,781



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How Little John Joined Robin Hood

An English Folktale Adapted by Katherine Follett
Illustrated by David Cockcroft

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This story is an English folktale adapted for Reading A–Z by Katherine Follett from an original retelling by Bertha E. Bush published in 1912.

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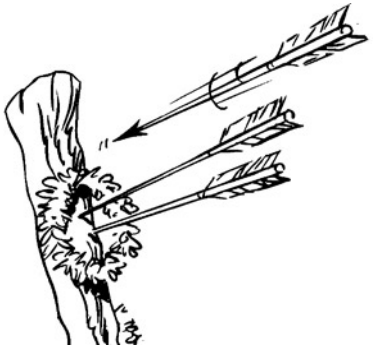

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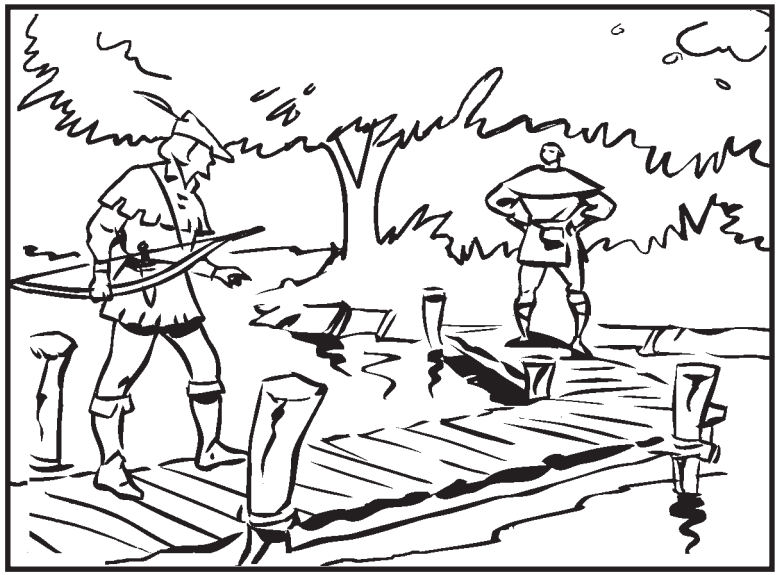
Introduction

When Robin Hood was a young lad, many of his friends were thrown out of their homes, arrested, or hanged. The French had conquered England, and they ruled over the common people with an iron fist. Though the English king was still on the throne, he was often at war, and the French ruled in his absence. They taxed families until they starved, then stole the people's land and gave it to **corrupt** friends in the church. As Robin grew older, he saw that his people would not be able to carry the weight of their despair for much longer. He vowed to bring justice—and hope—back to the land.

Since the rich stole from the common people, Robin decided to steal from the rich and return the money to the poor. He cleverly hid himself in Sherwood Forest, where he was safe from the lords who hated him and where he could steal from wealthy people who dared to travel near the wood.

His name quickly became famous, and English people everywhere adored him. Brave men from all over the country decided to join Robin Hood's cause and soon a large band of followers lived with him in the forest—men who had lost everything as well as men who had everything to lose. David of Doncaster, the cobbler; young Will Scarlet; Much, the miller's son; Arthur a Bland, the tanner; Friar Tuck; and many more brave souls cast their lot with the noble outlaw. Robin Hood's men were more loyal to him than they had ever been to their cruel French lords.

The Merry Men, as they became known, lived entirely outdoors, hunting for their food, cooking over a fire, and sleeping with only a blanket of stars upon them. They spent their days practicing archery, wrestling, and sword fighting until they were the strongest and most skilled fighters in England. There were only two types of lawful men left in the land: wealthy men who despised Robin Hood, and honest and virtuous men who envied Robin Hood's bravery and freedom, and who spread the news of his exploits far and wide. Tales of Robin's deeds are still told to this day, including the story of how he met Little John, his right-hand man and dearest friend.



John Little

John Little was his real name, the name he was called before he joined Robin Hood's band. He was the tallest and strongest man who ever walked through the kingdom, and unlike most men, he was loyal to no one, neither to the lords nor to the outlaws. He was such a brave fighter that he felt safest when he was by himself.

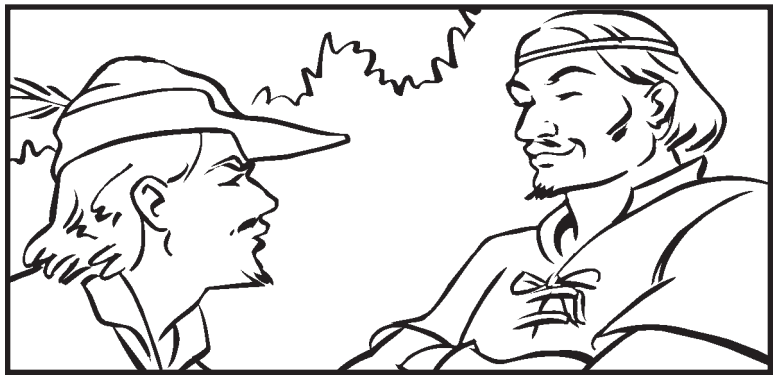
When Robin Hood first saw him, John Little was strolling along the edge of the forest, about to cross a narrow bridge over a stream. Thebridge was so narrow that only one person could cross it at a time, and as it happened, Robin Hood stepped on it from one side just as John Little stepped on it from the other.

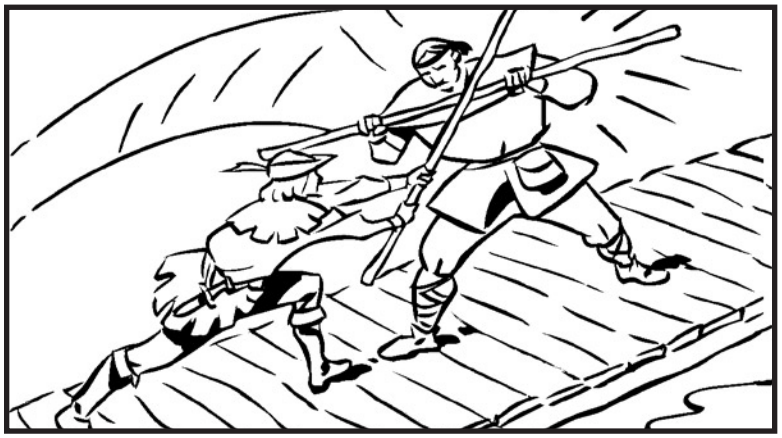
"Step off the bridge and let the better man cross first," called Robin Hood. Robin did not think he was the better man, but he wanted to see what the tall man would do. He had never seen a man who looked so large and strong and yet so **agile** (A-juhl). Robin knew he wanted the stranger to join his band.

"Fie!" cried the stranger. "Stand back **thyself**, for I am the better man." He had never met anyone who could match his strength and skill, although he was secretly impressed by the smaller man's spirit.

"Aye, no choice have we then but to fight to see who truly is the better man," said Robin Hood, who loved a good fight better than he loved a good dinner.

"With all my heart," answered the stranger with a grin.





The Fight

Robin Hood cut two great oak branches to serve as weapons, since it would be unfair to use his bow and arrows when the stranger didn't have any. "He who can knock the other off the bridge and into the water is the better man," said Robin. The stranger nodded, and the two men met as eagerly as two young boys wrestling for fun.

What a great fight it was! They struck each other again and again with their heavy sticks—*Crack! Crack! Thud! Crack!*—but each man was so strong and skillful in dodging blows that neither could knock the other down. Each one got hit many times, but neither man thought of stopping. For an hour, they fought on that bridge, yet neither one could knock the other into the water. The bridge protested under the stress of the battle, groaning and creaking, but holding strong.

The smacking and grunting of the battle drew Robin's men to the edge of the stream to watch. Some yelled loyally when their leader struck a good blow or made a clever dodge, but others, impressed with the agility of the stranger, cheered when he landed a blow or whipped his great bulk around gracefully. They had never seen a man give their leader such a fight.

At last, Robin gave the stranger a terrible whack that made him stagger and flail, but the stranger recovered and gave Robin a crack on the head that made blood flow. Robin swung back **savagely** (SAV-ij-lee), but the stranger avoided the blow. The blood ran into Robin's eyes so that he could not see, and the stranger gave Robin a smack in the side that tumbled him right into the water.

Robin lay there looking up and laughing out loud—he never carried a grudge. "**Thou art** an expert with that stick, good fellow; **ere** today, no man **hath** beaten me."

Robin Hood's followers took it less lightly. Even those who had cheered for the stranger suddenly stepped from behind the trees with their bows trained on the man who had knocked their leader into the water.

There were nearly forty men, all dressed cleverly in green so that they would be utterly invisible behind the bushes and amidst the trees. Even with all their yelling, the stranger had not noticed them while he had been concentrating on the fight.

"What happened, master?" asked Will Scarlet. He was beside himself. "Thou art bruised and bloody, and never hath we seen you beaten before. Is this some kind of trick?"

"No, 'tis no trick at all; this sturdy fellow **walloped** me and sent me tumbling into the water," Robin Hood said as he pulled himself up, ignoring the giant drum that seemed to be beating inside his head.

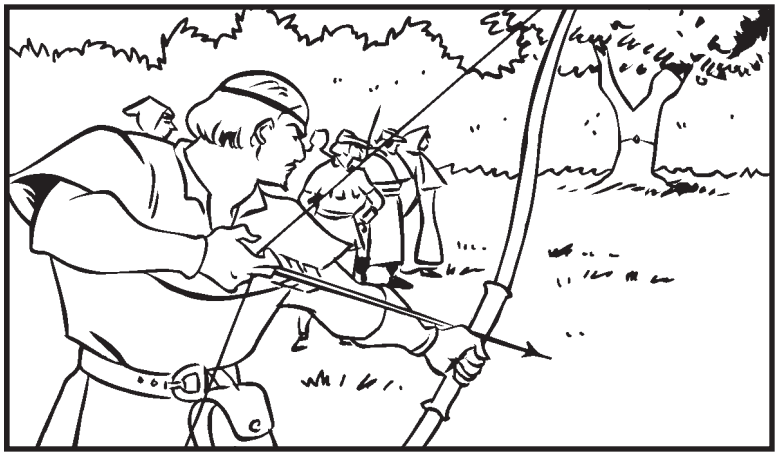
"Then a dunking and a beating he shall have!" said David of Doncaster. He stormed forward, followed by Will Scarlet, Arthur a Bland, and half a dozen men eager to carry out his threat, but Robin Hood ordered his men back.

"Nay," he said, "**forbear**. 'Twas a fair fight, and he won. He is brave and hearty, and I would have him in our band. Wilt thou join with us?" he asked the stranger "I am Robin Hood, and my band is the finest in all of England. We steal from the rich and give back to the poor so that all will be provided for and justice will be returned to England."

Most men would have trembled at hearing the name "Robin Hood," for the lords always described Robin as a cruel and fierce outlaw. But John Little was afraid of no man, and besides, he'd always suspected that the lords were exaggerating Robin Hood's savagery so that they would not appear as foolish after being robbed by him.

"Why should I join thy band as an **underling** if I am a better fighter than the leader? I have no need for those who cannot do better than I can alone. If any man among **ye** can shoot a bow and arrow more accurately than I can, I will join," he said. He was confident that none of them could, he was a very skillful shot with a bow.

"Well, thou art obviously an extraordinary man, but I shall try," said Robin.



The Archery Match

Robin Hood sent Will Scarlet to cut a three-inch piece of white bark and tie it to an oak a full eighty yards away. The piece of bark looked like a tiny speck in the distance.

"Now, sir, choose any of our bows and arrows to shoot with," Robin said.

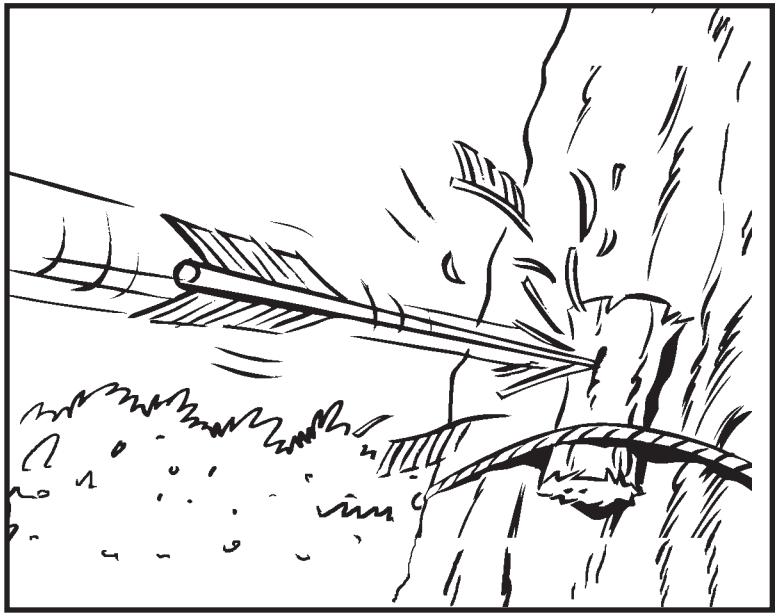
The stranger studied the bows lined up against the trees, looking for the one most suited to someone of his tremendous bulk. John Little finally selected the largest bow, aimed his arrow carefully, and shot it straight into the center of the white bark. The arrow flew so straight and powerfully and true that only its feathers stuck out beyond the bark. All Robin Hood's followers caught their breath in amazement, for they had seen such shooting only from Robin Hood himself.

"That is a fine shot indeed," said Robin Hood heartily. "No one can top that, but perhaps I can shoot one just as well."

Then Robin Hood drew his own bow and shot an arrow that flew so straight and swiftly, it struck the stranger's arrow dead-on and splintered it into pieces. Robin Hood's band gave a mighty roar.

"Now wilt thou join my band?" asked Robin Hood with a smile.

The stranger saw that he had met his match and immediately declared his **allegiance** (ah-LEE-jance). "With all my heart," he answered.



Little John

From the minute John Little saw Robin Hood's skill, he loved Robin as his dearest friend, and since John had never been beaten before, he was very respectful of the man who was skilled enough to do so.

"What is **thy** name?" asked Will Scarlet, taking out a writing tablet as though to sign the stranger up.

"John Little," answered the large man, and the band of Merry Men roared with laughter.

"In sooth, he jests!" cried Much, the miller's son, slapping his knee.

"I do not care for that name," chuckled merry Will, "for it does not fully describe thy puny stature! We shall call **thee** Little John."

And so they had an enormous feast to celebrate Little John's entrance into the group. By the dying light of the fire, with their bellies full, the Merry Men shared their secret signals and passwords with Little John, a sign that they trusted him as much as their leader did. From that day on, Little John was Robin's second- in-command, and no one argued with the choice, because John was clearly the best among them all—next to Robin. Little John served Robin faithfully for many years and loved him better with every year.

Glossary

agile *(adj.)*	able to move one's body quickly and accurately (p. 7)
allegiance *(n.)*	loyalty, dedication to a person or a group (p. 13)
art *(v.)*	are (p. 5)
corrupt *(adj.)*	dishonest in order to cheat or gain something (p. 4)
ere *(prep.)*	before (p. 9)
exploits *(n.)*	adventures (p. 5)
forbear *(v.)*	hold back (p. 11)
hath *(v.)*	has or have (p. 9)
savagely *(adv.)*	wildly; fiercely (p. 9)
thee *(n.)*	you (object of the sentence) (p. 14)
thou *(n.)*	you (subject of the sentence) (p. 9)
thy *(adj.)*	your (possessive) (p. 14)
thyself *(n.)*	yourself (p. 7)
underling *(n.)*	one who is not in charge (p. 11)
walloped *(v.)*	beat (p. 10)
ye *(n.)*	you (plural) (p. 11)

Name _____

INSTRUCTIONS: As you read, list causes in the left column and their effects in the right column.

Topic: _____

Cause	Effect

HOW LITTLE JOHN JOINED ROBIN HOOD • LEVEL V • 1

SKILL: CAUSE AND EFFECT

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Name _____

Instructions: Fill in the missing present-tense or past-tense verb. Then choose six past-tense verbs and use them to write sentences about Robin Hood and Little John.

Present-Tense Irregular Verbs	Past-Tense Irregular Verbs
choose	
	stole
come	
	struck
leave	
	swung
go	
	caught
say	
	fought

_____

_____

_____

_____

_____

_____

_____

_____

_____

HOW LITTLE JOHN JOINED ROBIN HOOD • LEVEL V • 2

SKILL: VERB TENSE

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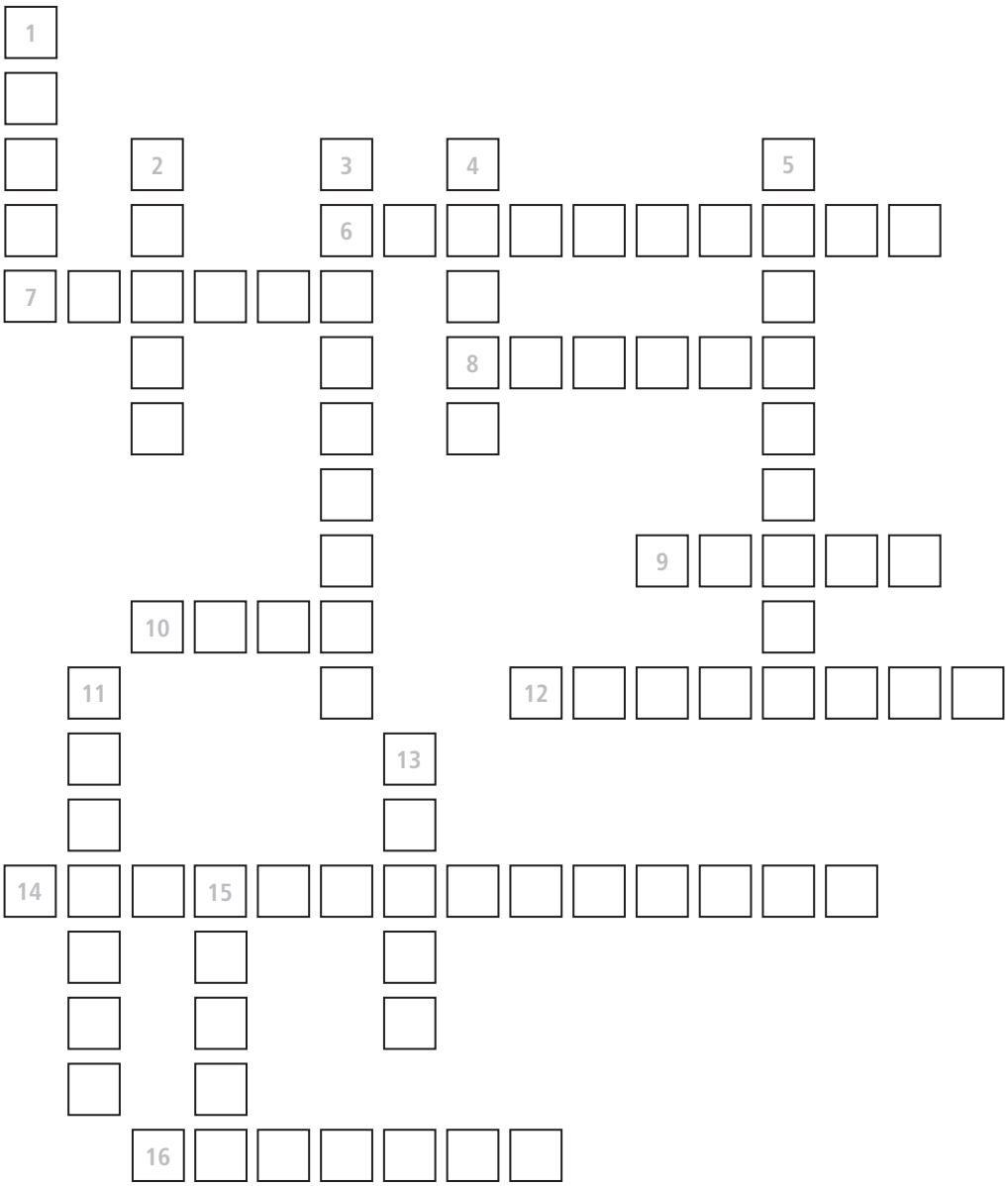
Name _____

Instructions: Use the book to find the answers to the crossword puzzle below.



ACROSS

6 Loyalty
7 Obeying the law
8 A feeling of hostility or anger toward someone
9 Able to move one's body quickly
10 Robin's best friend
12 Wildly, fiercely
14 Setting of book
16 Name of a European country

DOWN

1 To wave one's body wildly
2 Promised
3 Beating
4 Dignified, graceful
5 One who is not in charge
11 Sport of shooting arrows
13 Large, knifelike weapon
15 _____ Hood

HOW LITTLE JOHN JOINED ROBIN HOOD • LEVEL V • 3

SKILL: CONTENT VOCABULARY

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The Last Great Race

A Reading A–Z Level V Leveled Reader
Word Count: 1,916

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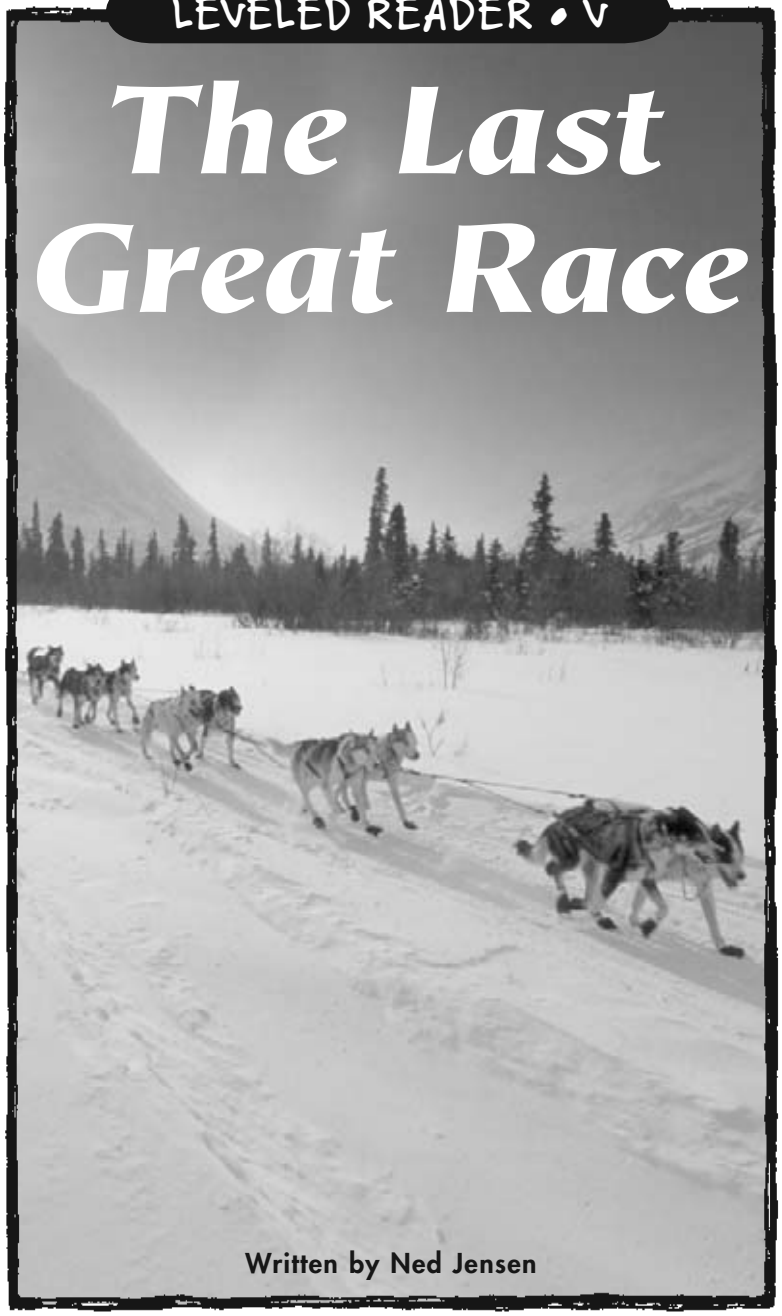
The Last Great Race



Written by Ned Jensen

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Front cover: A team shoots through Rainy Pass.

Back cover: A husky takes a well-deserved warm nap.

Title page: At –30°, racer Steve Carrick's breath freezes on every surface.

The Last Great Race
Level V Leveled Reader
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Map by Paula Schricker

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Correlation

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A musher and sled-dog team in the wilderness

Introduction

It is hard to imagine anyone wanting to travel almost 2,000 kilometers (1,200 mi.) across the Alaskan wilderness in the dead of winter. It is even harder to imagine someone doing it behind a sled pulled by a team of dogs. Yet every year since 1973, dozens of men and women have participated in what is known as "The Last Great Race on Earth." The race, better known as the Iditarod, starts in Anchorage, Alaska, on the first Saturday in March. It is without a doubt one of the most **grueling** sporting events ever held.

The Inspiration

In the winter of 1925, a terrible disease called **diphtheria** struck the town of Nome on the central coast of Alaska. Diphtheria, which usually attacks children, is caused by bacteria that infect the lungs, suffocating the victim. It can be treated with an injection of **serum**. But during the harsh winter, Nome was running out of serum. Doctors in Nome sent an urgent plea to the city of Anchorage asking for more. Someone suggested they send the serum by plane, but flying was dangerous in 1925. The planes of that time could not cope with the fierce storm that was raging. Instead, the serum was loaded on a train and sent northward to Nome. Unfortunately, the train tracks ended about 1,200 kilometers (700 mi.) short of the town.

A dog team in Nome

The only way to cover the remaining distance was by dogsled. A **musher**, or sled driver, loaded the serum from the train and traveled to a village or house, where he passed it to another musher. The next musher passed the serum to another musher at a second village or house, and so on all the way to Nome. Thanks to the brave mushers, Nome's children were saved.

Do You Know?

The lead dog of the sled-dog team that arrived with the serum in Nome in 1925 became famous. His name was Balto, and he was the subject of many news reports. Balto even went on tour throughout the United States and Canada with other dogs from his team. He eventually retired to the Cleveland, Ohio, zoo and died in 1933. Today, schoolchildren have begun a campaign to return Balto's preserved body to Alaska.

History

The 1925 journey demonstrated how important dogsledding had once been for the people of Alaska. But by 1967, dogs were being replaced by snowmobiles, cars, and trucks. Two Alaskans, Dorothy Page and Joe Redington, Sr., wanted to do something that would help save this 6,000-year-old tradition. Dorothy, an Alaska history buff, and Joe, a dog breeder and musher, decided to hold a sled-dog race along the Iditarod trail, a route created during the Alaskan gold rush. The trail got its name from Alaskan Native Americans who called the surrounding hunting area *Haiditarod*, or "The Distant Place." The route of the first race was about 45 kilometers (28 mi.) and took only two days to complete.

Dorothy Page

Joe Redington, Sr.

In order to attract mushers, Joe and Dorothy raised $25,000 in prize money. This was enough money to get 58 mushers to enter. But the next year, the race was canceled because the mild winter led to a lack of snow and a lack of interest. Another race was held in 1969, but organizers could only raise enough money for a $1,000 prize, and only 12 mushers entered.

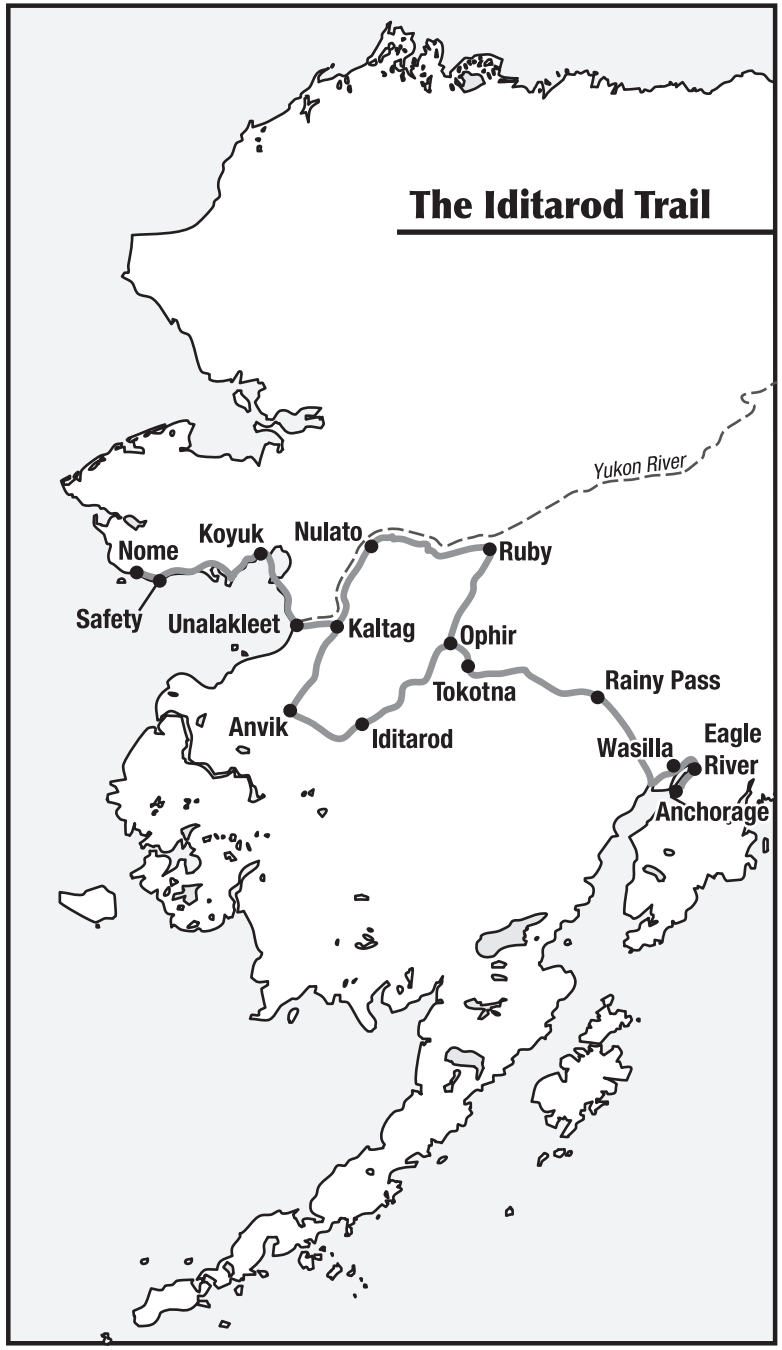
But the lack of interest did not discourage Joe Redington, Sr. He was determined to make the race longer and more challenging. In 1973, he extended the route to 1,870 kilometers (1,162 mi.). It now stretched from Anchorage to Nome and was the longest sled-dog race in the world. Joe managed to increase the prize money to about $50,000. In 1973, 34 mushers entered the first official Iditarod. It took the winner 20 days to complete the race, and the last-place finisher reached Nome 12 days later.

The Route

The trail taken by the mushers carrying serum in 1925 only covers about half of today's northern Iditarod race trail. The current trail uses two routes, the northern and the southern, which split off for 500 kilometers (300 mi.) in the middle of the race. On even-numbered years, mushers take the northern route, and on odd-numbered years, they take the southern route.

The official opening of the race is a bustling ceremony in Anchorage. The dogs make a **ceremonial** run from Anchorage to Eagle River. Then the dogs are trucked to the official start in Wasilla. This way, the dogs are not competing on the dangerous city streets of Anchorage, and they do not have to cross the treacherous Cook Inlet.

The busy start in Anchorage



Jeff King, Iditarod champion in 1993, 1996, and 1998

Not every team starts at the same time. Instead, teams take off at two-minute intervals to prevent teams from running into each other. The differences in time are erased at the required 24-hour stop, where officials hold the teams back for a few extra minutes.

Since the race takes over a week to complete, there are 26 checkpoints along the route where mushers and dogs can rest. Before the race begins, mushers send dog food and other supplies to the checkpoints so they will not have to carry them on the trail. The average distance between checkpoints is 74 kilometers (46 mi.)—longer than the entire 1967 race—and the greatest distance between checkpoints is 150 kilometers (93 mi.).

Off they go!

The dogs can keep a steady speed of about 19 kilometers per hour (12 mph) for about 4 to 6 hours before they get tired. This is usually long enough to get from one checkpoint to the next. But the dogs also rest on the trail, so the mushers don't always stop at every checkpoint.

In order to keep the teams on course through the trackless wilderness, the trail is marked with orange stakes and reflective tape. Additional markers are set up in the mountains and along the coast. Each year, volunteers set out about 12,000 stakes. Getting lost could cost a musher his or her life, so it is important that the trail be well marked.

The Iditarod trail is filled with some of the most beautiful scenery in the world. It crosses the Alaska Mountain Range at a gap known as Rainy Pass, though during the Iditarod, it is more likely to be a snowy pass. The trail also follows the Yukon River Valley and travels along the coast of the Bering Sea before reaching Nome. Along the way, it passes through thick forests and over frozen **tundra**. The teams must cross frozen streams and rivers, which can be deadly if the ice is too thin. Wild animals such as moose have been known to attack and kill dogs. And racers can encounter fierce storms with arctic winds and driving snow.

Rainy Pass, the highest elevation on the race trail

The trail ends in the small city of Nome. During the winter, the sun rises for only a few hours a day, and the race is a welcome celebration for the residents. Citizens of Nome line the streets to watch the finishers come in. While 55 to 75 mushers usually start, every year several drop out because of sickness, injury, or simple exhaustion. Today, winners of the Iditarod usually complete the race in 10 to 12 days. The record time of 8 days, 22 hours, and 46 minutes was set in 2002 by Martin Buser. There can be a full week between the times when the first and last mushers cross the finish line.

Martin Buser and his dogs

Do You Know?

During the early days of dogsledding, a red lantern was hung outside a checkpoint to help the musher find shelter. The lantern remained lit until the musher arrived. Today, a red lantern is hung over the finish line of the Iditarod. The lantern is lit at the start of the race, and the last musher to cross the line puts it out.

The Mushers

Mushers come from all walks of life. They include professional athletes, tradespeople, authors, doctors, teachers, and lawyers. Since 1974, both men and women have competed in the Iditarod. Two women have won the race. One of them, Susan Butcher, has won four times.

IDITAROD WINNERS SINCE 1973

Year	Musher	Days	Hrs	Min	Sec
1973	Dick Wilmarth	20	00	49	41
1974	Carl Huntington	20	15	02	07
1975	Emmitt Peters	14	14	43	45
1976	Gerald Riley	18	22	58	17
1977	Rick Swenson	16	16	27	13
1978	Dick Mackey	14	18	52	24
1979	Rick Swenson	15	10	37	47
1980	Joe May	14	07	11	51
1981	Rick Swenson	12	08	45	02
1982	Rick Swenson	16	04	40	10
1983	Rick Mackey	12	14	10	44
1984	Dean Osmar	12	15	07	33
1985	Libby Riddles	18	00	20	17
1986	Susan Butcher	11	15	06	00
1987	Susan Butcher	11	02	05	13
1988	Susan Butcher	11	11	41	40
1989	Joe Runyan	11	05	24	34
1990	Susan Butcher	11	01	53	23
1991	Rick Swenson	12	16	34	39
1992	Martin Buser	10	19	17	15
1993	Jeff King	10	15	38	15
1994	Martin Buser	10	13	05	39
1995	Doug Swingley	10	13	02	39
1996	Jeff King	09	05	43	13
1997	Martin Buser	09	08	30	45
1998	Jeff King	09	05	52	26
1999	Doug Swingley	09	14	31	07
2000	Doug Swingley	09	00	58	06
2001	Doug Swingley	09	19	55	50
2002	Martin Buser	08	22	46	02
2003	Robert Sorlie	09	15	47	36

Do You Know?

Since 1986, the Iditabike Race has been held alongside the Iditarod trail. In this 322-kilometer (200-mi.) race, a hearty group of mountain bikers rides over the snow and ice, braving sub-zero temperatures and strong winds.

While many are Alaskans, mushers come from all around the world. They come from many of the 50 states and from Canada, Russia, Norway, Japan, New Zealand, Great Britain, and Italy. To enter the Iditarod, a musher must be at least 18 years old. He or she must have competed in a previous Iditarod or two qualifying races of at least 805 kilometers (500 mi.) in the previous two years.

Sled-dog racing is a solo sport, and all mushers compete in the Iditarod alone. They have no crews waiting at the checkpoints to help them feed and care for their dogs. Most mushers will feed their dogs and make straw beds for them even before they feed themselves.

So what would cause someone to brave temperatures as low as –51° Celsius (–60° F), strong winds, blowing snow, wild animals, and treacherous ice, all on very little sleep? The $68,000 winner's prize may be an **incentive**, but most do it for the challenge, for the love of the sport, and the love of their dogs. Most participants are thrilled simply to finish the race.

The Dogs

The Iditarod is really about the dogs. The dogs who run the race, called huskies, have been specially bred to pull sleds the way collies have been bred to herd sheep. The sturdy, tough huskies can pull a sled carrying supplies and the musher, a total weight of 136 to 182 kilograms (300–400 lbs.). This may seem like a lot, but huskies love to pull.

Huskies have also been bred to withstand extreme cold. They have two layers of fur. The outer layer, made of thick hairs, protects the dog from wind and water. The inner layer is a lot like a sheep's wool. It serves to **insulate** the body from cold temperatures and keep body heat from escaping. Some people even use husky hair to make warm hats and gloves.

Huskies can't hide their enthusiasm.

The dogs do not lose heat by sweating through their skin as humans do. Instead, they pant, and they sweat through their feet. These adaptations allow huskies to run comfortably at temperatures below –51° Celsius (–60° F).

Do You Know?

Often, sled dogs on the Iditarod wear "booties" on their feet. The booties keep the dogs' paws dry and prevent cuts from the sharp ice and rocks on the trail. A dog team can go through as many as 1,000 booties during an Iditarod. This can get pretty expensive, since the booties cost about fifty cents each.

Huskies have also been bred to work as a team. This is important, since the whole team must work together to pull the sled. An Iditarod team can have as many as 16 dogs. Usually, an experienced lead dog runs at the front of the team and helps set the pace. Huskies are extremely friendly dogs, and, like most dogs, they love to please their owners.

Lead dogs are tough, enthusiastic, and experienced.

A vet checks a resting husky.

Care of the huskies before, during, and after the race is of utmost importance to the mushers and to the officials who run the Iditarod. Veterinarians wait at each checkpoint to examine the dogs as they come in. Dogs suffering from frostbite, exhaustion, or injury are pulled from the race. In fact, most mushers drop off one or more dogs that become tired or don't want to run anymore. There are three **mandatory** stops during the race to let the dogs rest. The first one, taken at the musher's choice of checkpoint, is 24 hours long. The other two are 8 hours long and are made at specific checkpoints. Mushers who mistreat their dogs are disqualified.

The dogs eat a lot during the race to keep their energy high. One dog can consume up to 14,000 calories per day. The dogs' diets are rich in fat and protein from meat, pure fat, and dry dog food. They also need a lot of water, which the mushers warm up so that the dogs will not lose heat. The dogs typically eat three meals a day during rests, and they also get lots of snacks on the trail.

Food Consumed per Meal	
Food Type	**Quantity**
Dry dog food	.4 kilograms (12 oz.)
Meat	.5 kilograms (1 lb.)
Fat	.25 kilograms (8 oz.)
Water	1 liter (1 qt.)

Like any athletic team, the dogs go through rigid training before the race. Sled dogs are trained to pull from the time they are puppies. Between September and February before the Iditarod, teams make practice runs of up to 2,253 kilometers (1,400 mi.). They also compete in smaller races of 322 kilometers (200 mi.) or more. In the end, the best-trained team is usually the winner.

The Iditarod is, above all, solitary.

Conclusion

The Iditarod, also known as the "Last Great Race," is a grueling competition between sled-dog teams. They race across the Alaskan wilderness for 10 to 12 days for a $68,000 prize. Mushers come from around the world to compete. Journalists, TV networks, and newspaper reporters from across the globe come to cover the race. But it is not the money or the fame that attracts the mushers.

The mushers do not really race their teams against one another; they race against the hardships of the wilderness and against themselves. Any musher will tell you that the true heroes of the Iditarod are the huskies who run almost 2,000 kilometers over some of the harshest, most beautiful land on Earth.

Explore More

On the Internet

A. In the address window, type *www.google.com.*

B. Type *Iditarod* into the search window and click on "Google Search."

C. Read the colored links. Click on one that looks interesting.

D. When you want to explore more links, click on the back arrow at the top left.

E. You can also look up other Iditarod-related subjects, such as *Susan Butcher, huskies,* or *dog training.*

At the Library

Ask your librarian to help you find books on the Iditarod. You can also look up books on dogsledding, huskies, and life in Alaska. Many adventure stories and other fiction books have been written about this rugged state. And some of the most amazing adventures are true.

Glossary

ceremonial done only for show; not official (p. 9)

diphtheria a disease of the respiratory system, caused by bacteria, that strikes children in particular (p. 5)

grueling extremely difficult (p. 4)

incentive something that causes a person to take action; motivation (p. 16)

insulate prevent loss of heat (p. 17)

mandatory required; something a person has to do (p. 20)

musher person who drives a sled-dog team (p. 6)

serum special medicine given in a shot (p. 5)

tundra huge, flat arctic plains where it is too cold for trees to grow (p. 13)

Name _____ Reading a-z

INSTRUCTIONS: Read each sentence below. In the space provided, write whether it is fact or fiction. If the sentence is a fact, prove it by looking it up in the book and listing the page number where you found it. If it is an opinion, prove it by describing how someone might disagree with the statement.

1. In the winter of 1925, a terrible disease called diphtheria struck the town of Nome.

   Fact or opinion? _____ How can you prove it? _____

   _____

2. The mushers were the bravest people in the world.

   Fact or opinion? _____ How can you prove it? _____

   _____

3. People who don't win the Iditarod feel very sad.

   Fact or opinion? _____ How can you prove it? _____

   _____

4. The 1968 race was canceled because of a lack of snow.

   Fact or opinion? _____ How can you prove it? _____

   _____

5. The Iditarod trail has some of the most beautiful scenery in the world.

   Fact or opinion? _____ How can you prove it? _____

   _____

6. The fastest Iditarod time is 8 days, 22 hours, and 46 minutes.

   Fact or opinion? _____ How can you prove it? _____

   _____

7. Husky fur keeps body heat from escaping.

   Fact or opinion? _____ How can you prove it? _____

   _____

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Name _____

INSTRUCTIONS: Look up the words below in the book and re-read the sentences in which they are found. In the second column, write whether the context clue is a **definition**, a **compare and contrast**, or a **read around the word**. In the third column, write a definition of the word based on the context.

Word and Page	Type of Context Clue	Your Definition
musher (p. 6)		
serum (p. 5)		
diphtheria (p. 5)		
insulate (p 17)		
mandatory (p. 20)		
ceremonial (p. 9)		

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Everest: On Top of the World

A Reading A–Z Level V Leveled Reader
Word Count: 2,001

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EVEREST
On Top of the World

Written by Ned Jensen

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Special thanks to Jonathan Chester of Extreme Images, Inc., for providing most of the photos used in this book. Jonathan is one of the world's leading polar photographers and expeditioners. He has written and photographed a number of books for children, including *The Young Adventurer's Guide to Everest,* published by Ten Speed Press.

Front cover: Brad and Sherm Bull wear oxygen masks as they stand at the summit.

Title page: Climbers encounter towers of cracked, moving ice on their way up.

Back cover: Many Sherpas are Buddhists. The flags represent prayers.

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Introduction

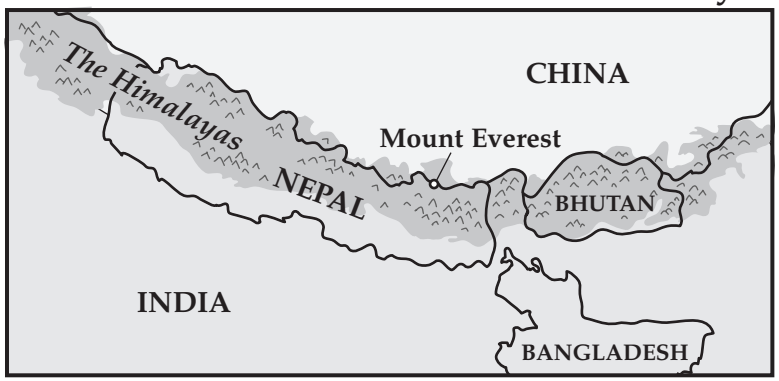
Every year, more than one hundred men and women with an incredible spirit of adventure rushing through their veins start a grueling climb. It is a climb they hope will take them to the top of the world. It is a climb to the **summit** of the world's tallest mountain, Mount Everest.

Climbers use axes and spikes on their boots to hang onto ice.

Mount Everest

Mount Everest is located in Asia, along the border of the countries of Nepal and China. It is 60 million years old and is the tallest mountain in a chain of extremely high mountains called the Himalayas.

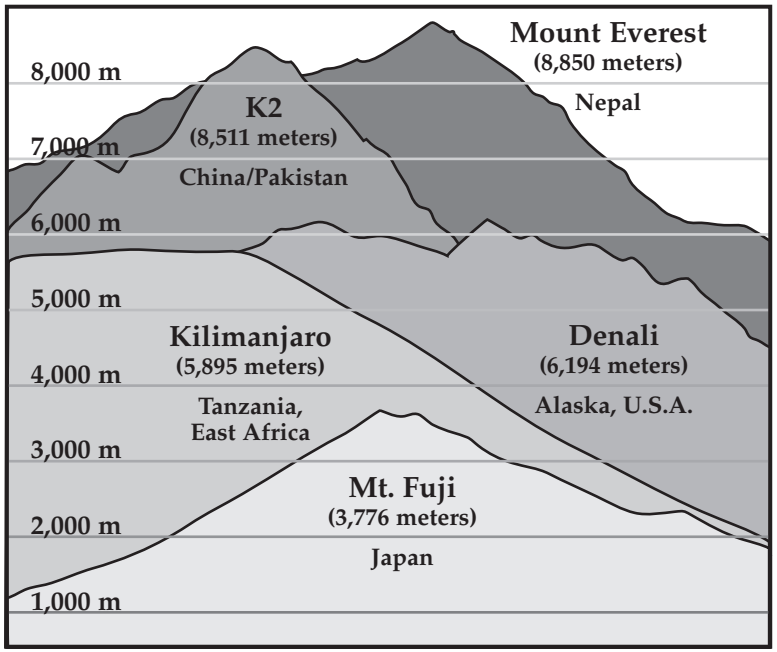
Location of Mount Everest and the Himalayas



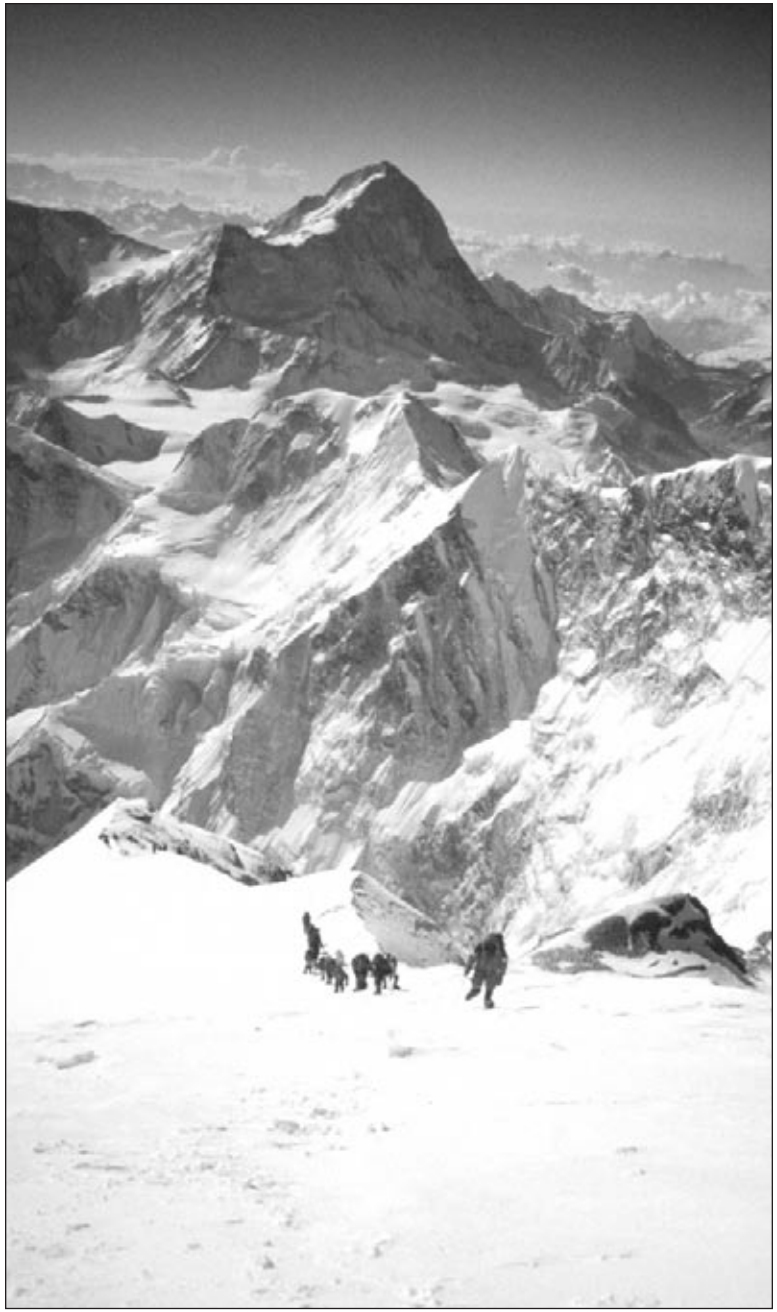
The Himalayas and Mount Everest are located near a **fault line** between two moving plates, or pieces of the earth's crust. One of the plates is moving under the other, forcing the top plate to rise and form mountains. Mount Everest continues to grow about 6 centimeters (2.4 in.) per year.

Mount Everest towers 8,850 meters (29,035 ft.) above sea level. That is almost as high as a passenger jet flies, and almost 305 meters (1,000 feet) taller than K2, the world's second tallest mountain.

A Comparison of Well-Known Mountains



Many people consider it the ultimate challenge to reach the tallest point on Earth. The climb to the top of Mount Everest is filled with dangers. Steep cliffs of rock and ice, deep **crevasses**, and moving slabs of ice and snow stand between climbers and the summit. The air near the top of Mount Everest has far less oxygen than the air at lower elevations. This makes breathing very difficult, and climbers tire easily. Add to these factors the possibility of high winds and sub-zero temperatures, and the top of the world seems almost unreachable.



Many of these climbers were caught in a deadly storm in 1996.

The First to the Top

A team of climbers from Great Britain was the first to attempt to reach the top of Mount Everest. They set out for the summit in 1921, but failed. In 1924, George Mallory (who tried in 1921) and Andrew Irving attempted to reach the summit. They were last seen above Camp VI (Camp 6). Years passed without anyone knowing their fate. In 1999, a group of climbers came across Mallory's body 305 meters (1,000 ft.) below the summit. No one knows for sure if he made it to the top and was heading back down when he fell to his death, but it is doubtful that he succeeded.

In 1953, another team set out to climb the world's tallest mountain. On May 29, 1953, Sir Edmund Hillary and Tenzing Norgay crept slowly up the frozen side of the mountain and became the first to reach the summit. It had taken them seven weeks from the day they arrived at Everest base camp.

Edmund Hillary was a beekeeper from New Zealand (he was made a knight after he climbed Everest, making his name "Sir" Edmund Hillary), and Tenzing Norgay was a **Sherpa**. Sherpas are the people who live in the valleys around Mount Everest. Hillary and Norgay's achievement was celebrated around the world.

Sir Edmund Hillary (left) and Tenzing Norgay relax after reaching the summit.

Neither of these climbers sought fame or fortune, but they used their fame to benefit the people of Nepal. Sir Edmund Hillary established a foundation that has built 2 hospitals, 12 medical clinics, 27 schools, and over 20 bridges. The foundation is also responsible for planting hundreds of thousands of trees in the Himalayas.

Tenzing Norgay established a climbing school, and more than 40 of his students have reached the top of Mount Everest. Like Hillary, Norgay has also done a lot to improve education for Sherpa children.

Climbers

Many people thought that after Hillary and Norgay reached the top of Mount Everest, no one would want to do it again. But the opposite is true. Since the 1920s, thousands of people have attempted to reach the summit of Mount Everest. Over 1,500 have accomplished their goal.

Men and women, young and old come from all over the world to make the attempt. Climbers from Austria, Bosnia, China, Germany, Great Britain, Canada, Italy, Japan, Mexico, Russia, the United States, and many other countries have reached the top.

Most people hire Sherpas as porters, or helpers who carry lots of heavy gear.

Do You Know?

Peter Hillary, the son of Sir Edmund Hillary, followed in his father's footsteps. Peter has climbed to the top of Mount Everest twice, once in 1990 and again in 2002. You can bet that his father is very proud of Peter's accomplishments.

There have been many new firsts over the years. In 1975, Junko Tabei, from Japan, became the first woman to scale the mountain. In 1978, the first person climbed to the summit without the aid of bottled oxygen. In 2000, a climber skied all the way down from the top. A year later, another climber snowboarded down from the summit. In 2001, Eric Weihenmayer became the first blind person to reach the top. No one knows what future firsts there may be.

A Sherpa by the name of Appa Sherpa has made it to the top of Mount Everest a record 13 times. He reached the summit for the thirteenth time in May of 2003. The youngest to climb Everest was a 15-year-old Sherpa who reached the summit in 2001. The oldest person to reach the summit was a 70-year-old Japanese climber who reached the top in 2003.

Timeline of Major Everest Climbing Feats

Appa Sherpa tried to reach the summit of Mount Everest several times before his first of 13 successes.

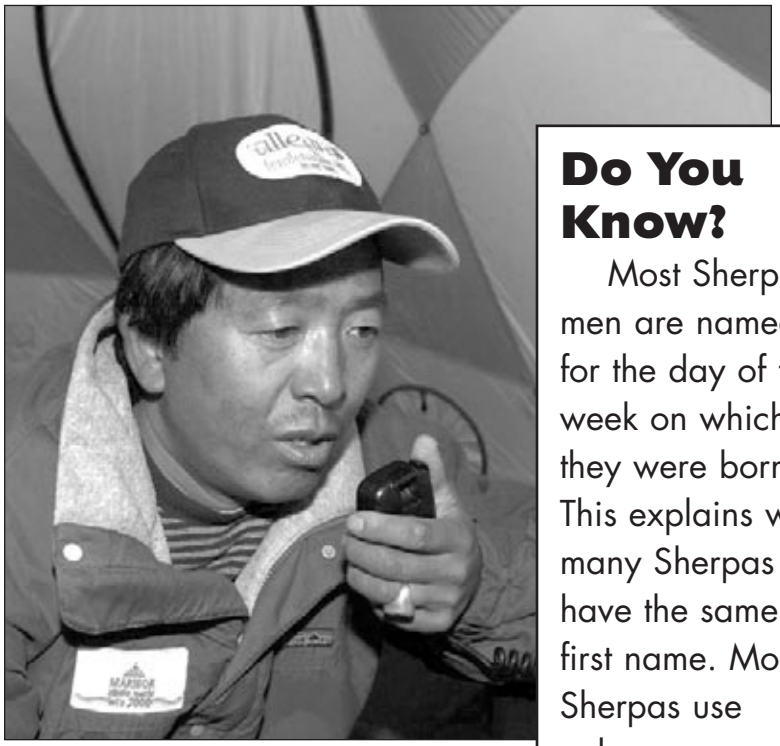
1921	**First attempt—British team**
1924	**George Mallory disappears**
1953	**Sir Edmund Hillary and Tenzing Norgay reach the top**
1975	**First female climber makes the summit**
1978	**First climber to reach summit without bottled oxygen**
1980	**First solo climb**
1996	**Storm kills 15—most in a single year**
1999	**George Mallory's body found**
2001	**First blind person reaches the top**
2003	**Oldest person to reach the top**
2003	**Appa Sherpa makes the most summits (13)**

Sherpas

About 500 years ago, the first Sherpas crossed over into Nepal from a region known as Tibet. They were originally herders and traders, but since settling under the shadow of Mount Everest, they have become known for their skill in guiding climbers up the mountain.

Living in such a high-altitude region has allowed Sherpas to adapt to the thin air and cold temperature of the Himalayas. Their bodies are better suited to breathing less oxygen, and they easily outperform people who come from lower-altitude regions. This explains why Sherpas make such good guides and **porters** for mountain climbers. But even most Sherpas need extra oxygen when they get near the top of Mount Everest.

Sherpas relax at Base Camp, where the lack of oxygen can make people from lower altitudes very sick.



Sherpas are often trusted leaders of climbing expeditions.

Do You Know?

Most Sherpa men are named for the day of the week on which they were born. This explains why many Sherpas have the same first name. Most Sherpas use only one name. Common names include Tensing, Nawang, Tashi, and Dorjee.

Sherpas are a friendly, happy people with an easy-going nature. They provide a very important service to other climbers. They carry gear, prepare food, and act as guides. They are proud of their mountaineering **heritage** and should be treated with the respect they deserve.

Preparing for the Climb

If you ever want to climb Mount Everest, you better make sure that you are in tip-top shape. The climb is very **strenuous** and will place huge demands on your body. Climbers spend years getting in shape and practicing their skills by climbing other challenging mountains. Climbers also spend extra time at high elevations to **acclimate** to the thinner air.

Climbing Mount Everest does not come cheap. Joining an expedition led by experienced climbers can cost as much as $65,000 (U.S.). The least expensive climb is estimated to be around $25,000. Even oxygen, at $300 a bottle, is very expensive, and each climber needs to take up to 20 bottles of oxygen—that's $6,000. You need $10,000 just to get a permit from the government of Nepal to go to the mountain. Many climbers spend a lot of time before their climb raising money.

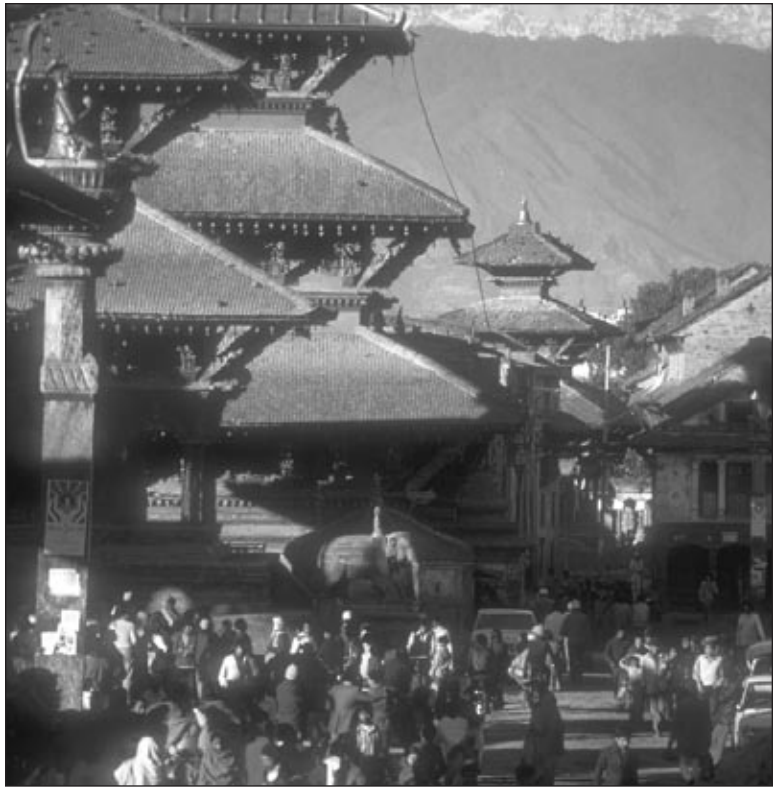
Nancy Feagin reached the summit of Mount Everest in May, 2001, using the equipment shown here.

To survive on the mountain, climbers need a huge amount of special clothing, climbing gear, camping gear, and food, some of which is shown below.

Clothing	
Gore-Tex® pants and jacket	Fleece top and pants
Lightweight down coat	Heavyweight down suit
Several pairs of thermal socks	Cap
Warm head gear	Sunglasses and goggles
Water resistant gloves	Heavy down mittens
Climbing Gear	
Heavy climbing boots (two sizes too big, for extra socks)	
Crampons (metal shoe spikes)	Oxygen (20 canisters)
Ice ax	15 meters of rope
Face mask	Harness
Maps	Compass
Camping Gear	
Large tent for base camp	
Smaller, high-quality tents for higher elevations	
Sleeping pads for each camp site	
Down sleeping bags (2–3)	Cooking stove
Bottled gas	Water purifier

The Climb

The safest times to climb Mount Everest are spring and fall, and May is the most popular month. A climb can take two months, so it must be carefully planned to avoid dangerous weather. During the winter, temperatures on Mount Everest can reach –50° Celsius (–58°F). During the summer, enormous storms dump meters of snow on the mountain.



Most people fly to Nepal's capital, Katmandu, before climbing.

A view of the crowded Base Camp from inside a tent.

There are up to 15 routes to the top of Mount Everest, and most begin at Base Camp. Base Camp lies almost 5,500 meters (18,000 ft.) above sea level, but is still 3,219 meters (11,000 ft.) below the summit. The trek to Base Camp alone can take 10 days. At Base Camp, climbers must spend about a week resting and acclimating to the high altitude. Then, climbers spend a few weeks hiking up to higher camps and back down. They must go back and forth to each camp several times before moving on to the next one. This gives them the chance to get used to working hard in the thin air.

Once the climbers are settled at the highest camp, they watch the weather reports and look to the sky. It may take several tries over several days to reach the top, and the weather conditions must be favorable. Winds should be no more than 32 kilometers per hour (20 mph), and the skies should be clear of snow. If the weather turns **inhospitable**, climbers may have to spend several days inside their tents. They may even have to return to Base Camp if the weather doesn't clear up.

It takes about 12 hours to reach the summit from the highest camp. The final trip usually starts around midnight so that climbers will be able to return before dark the next day. The last 100 meters (300 ft.) is the most difficult. It includes the Hillary Step, a cliff of ice and rock named after Sir Edmund Hillary.

Winds at the summit can blow snow into a blizzard.

The peak of Mount Everest

Once climbers reach the top, they may spend an hour or so enjoying the view and the sensation of sitting on top of the world. Then they try to make their way down before sunset. Descent back to the highest camp usually takes about four hours.

Not all climbers take their time getting to the top. In 2003, on separate occasions, two Sherpas climbed from Base Camp to the summit in under 13 hours. The fastest climber, Lhakpa Gyelu, set a record with his incredible time of 10 hours and 56 minutes. Sherpas can climb much faster than most other people because their bodies are adjusted to the high altitude.

Dangers

Nearly 10 percent of those who attempt to climb Mount Everest die. The year 1996 was a particularly fatal year for climbers when a storm claimed 15 lives. From 1922 to 2003, 179 climbers died climbing Mount Everest.

The greatest cause of death on Mount Everest is avalanches. Many climbing routes follow glaciers, which are moving rivers of ice. As the ice flows slowly downhill, enormous chunks can break off and collapse. The moving ice also has huge cracks called crevasses, which are sometimes hidden by a thin layer of snow. One misstep can send a climber plunging to his or her death.

Year	Successful climbs	Deaths
1922	0	7
1953	2	0
1963	6	1
1970	4	8
1978	25	2
1985	30	7
1993	129	8
1996	98	15
2002	159	3

Climbers must be prepared to deal with the effects of climbing in an oxygen-poor environment. Even at heights above just 3,000 meters (10,000 ft.), humans can experience **nausea**, headaches, confusion, loss of muscle coordination, and even **hallucinations**. At higher elevations, climbers can suffer from a life-threatening condition known as **edema**, a condition where fluid begins to collect in the brain and/or lungs.

The higher up the mountain a person climbs, the more difficult it becomes to breathe. At 5,500 meters (18,000 ft.), a climber is breathing only half of the normal amount of oxygen. Near the summit, breathing capacity drops to 30 percent of normal. A climber's heart pounds and breathing is very difficult. Climbers must stop and rest even when putting on their boots.

At high altitudes, the thin air blocks out fewer of the sun's harmful rays. Exposed skin can be severely sunburned, and without proper eye protection, the sun can burn a climber's eyes in a matter of minutes. Light reflecting off the white snow can cause a person to go temporarily blind. It is very important to wear eye protection, even during cloudy periods.

Winds on Mount Everest can blow at hurricane force, more than 161 kilometers per hour (100 mph). These frigid winds can freeze exposed skin in less than a minute. Frostbite is a serious danger, and some unfortunate climbers have had fingers, toes, and even their noses **amputated**.

Frostbite feels as awful as it looks.

Dehydration is also a serious problem for climbers, so it is important to drink lots of water. Because of the low temperature, all water must be re-melted before climbers can drink it.

Conclusion

Climbing Mount Everest is not for the faint of heart. In fact, when you consider the danger posed by freezing temperatures, high winds, blinding snow, and lack of oxygen, to say nothing of avalanches, crevasses, and icy slopes, you wonder why anyone would do it. It is the thrill of adventure, the sense of accomplishment, and the feeling of being on top of the world that brings thousands of people to Mount Everest.

Climbers cross dangerous glaciers on their way to the top.

Explore More

At the Library

Ask your librarian to help you find books on Mount Everest. You can find biographies of famous climbers, real-life adventure stories about climbing expeditions, and even guides on how to start climbing mountains yourself. For more adventures, look up other subjects, such as mountain climbing, arctic exploration, and the Himalayas.

You can also find many films, movies, and television specials about Mount Everest at your local library or video store.

On the Internet

A. In the address window, type *www.google.com.*

B. In the search window, type the subject you are interested in, such as *Mount Everest records, Edmund Hillary,* or *Sherpas.* Click on "Google Search."

C. Read the colored links. Click on one that looks interesting.

D. When you want to explore more links, click on the back arrow at the top left.

E. You can even find Web sites that track Mount Everest climbers as they go up!

Glossary

acclimate	to get the body used to a new climate or situation (p. 15)
amputated	cut off (p. 23)
crevasses	deep cracks in glacier ice (p. 6)
dehydration	a dangerous lack of water (p. 23)
edema	a condition in which fluid collects in the brain and lungs (p. 22)
fault line	a crack in the earth's crust at the edges of the plates (p. 5)
hallucinations	things a person sees or hears that aren't really there (p. 22)
heritage	a characteristic or culture handed down through family (p. 14)
inhospitable	harsh, unwelcoming, challenging to live in (p. 19)
nausea	feeling sick to one's stomach (p. 22)
porters	people who carry goods and equipment (p. 13)
Sherpa	a person who moved from Tibet to Nepal, near Mount Everest (p. 8)
strenuous	extremely physically difficult (p. 15)
summit	the highest point of a mountain (p. 4)

Name _____

INSTRUCTIONS: Cut out the vocabulary words on the bottom of the page and place them in the boxes where you think they belong. When you have finished reading, you can check the predictions you made about the vocabulary.

Words about the Mountain

Mount Everest

Words about the Dangers

Words about the People

crevasses	summit	Sherpas	Himalayas	dehydration
Tenzing Norgay	edema	porters	inhospitable	nausea

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Name _____

Reading a-z

INSTRUCTIONS: Record the main idea and supporting details for each chapter listed below.

	Main Idea	Details
Sherpas		
Preparing for the Climb		
The Climb		
Dangers		

EVEREST: ON TOP OF THE WORLD • LEVEL V • 2

SKILL: COMPREHENSION

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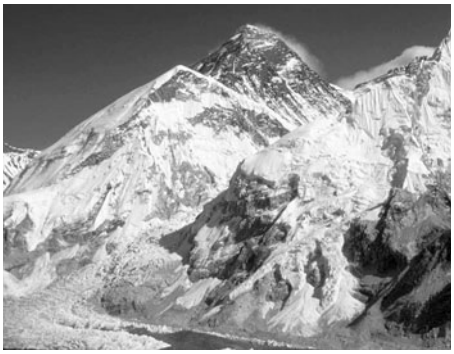
Name _____ Reading a-z

INSTRUCTIONS: Underline the adverbial phrases in the sentences and circle the verbs that they modify. Put a check mark in the correct column to show whether the phrase tells you *where* or *when*. If there is more than one phrase in each sentence, put a check mark in both columns.

Sentences	Where	When
1. The Himalayas and Mount Everest are located along a fault line.		
2. They set out for the summit in 1921, but failed.		
3. Sherpas are people who live in the valleys around Mount Everest.		
4. Hillary and Norgay's achievement was celebrated around the world.		
5. There have been many new firsts over the years.		
6. A Sherpa by the name of Appa Sherpa has made it to the top 13 times.		
7. About 500 years ago, the first Sherpas crossed over into Nepal from a region known as Tibet.		
8. During the winter, temperatures on Mount Everest can reach –50 degrees Celsius.		



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Name _____

INSTRUCTIONS: Fill in the clues by adding the suffix *-ible* or *-able* to the words in the box. You may have to change the spellings of some of the words.

value	rely	manage	move
question	sink	forget	collapse
combust	horror	sense	access

can be moved _____

can be folded _____

someone you can trust _____

reachable _____

having good judgment _____

worth a lot of money _____

can be managed _____

not worth remembering _____

dreadful _____

doubtful _____

able to burn _____

doesn't float _____

Challenge:

Add the prefix *un-* to one of your new words to create a word that means that something won't sink.

_____

Add the prefix *in-* to one of your new words to create a word that means something you cannot reach.

_____

Use either of the challenge's new words in a sentence.

_____

_____

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Jazz Greats

A Reading A–Z Level V Leveled Reader
Word Count: 1,948

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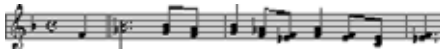
Early jazz was mostly upbeat music meant for dancing.

The Roots of Jazz



Can you name a kind of music that was invented in America? It's a kind of music that gets people moving. It can be fast and wild, or it can be slow and **melodic**. It's even older than rock and roll.

Think of a trumpet, saxophone, clarinet, drums, and other instruments blending together. Think of a beat that gets your foot tapping and your hands clapping.

Did you think of jazz? If you did, you're absolutely right. Jazz music began in the United States in the early 20th century. But its roots go back to before the Civil War.

Jazz is built on a long tradition of African-American music. Some of it is inspired by the music that slaves created while living in slave **quarters** in the southern United States. African Americans who were slaves found that music was one of the only ways to express their thoughts, ideas, and their desire for freedom. Another style of music called blues music also came from this African-American tradition. Blues and jazz styles of music often blend and overlap with each other.

Some of the music was full of sadness; some of it was full of joy. Sometimes people used their voices as instruments, and sometimes they made their own instruments, such as an early version of a banjo. Some of the songs were memorized and passed along from **plantation** to plantation. Much of the music was **improvised**; people invented it as they went along.

Early African-American music led to jazz, rock, blues, and hip-hop.

Jazz performers often improvise together in a kind of joyful game.

Today, improvisation is still at the heart of jazz. Musicians get together and "jam," or make things up as they go along. They might start with a song they all know, but each musician adds a little bit here and a little bit there, and soon they have a song that's completely unique.

Today, many of the great names in jazz are African Americans. Let's meet a few of the most famous jazz performers.

Louis Armstrong

Many people consider Louis Armstrong to be the greatest musician of the 20th century. Some call him the "Father of Jazz." He didn't invent jazz music, but he played it in a way that made people fall in love with it. His music made people happy—they'd never heard someone play a trumpet like he did.

Louis Armstrong started out playing a fast style of jazz called Dixieland. Later he experimented with many different styles.

Louis Armstrong was from a poor family in New Orleans, Louisiana. As a child he'd stand outside dance clubs and listen to the lively music being played inside. When he was thirteen years old, he bought a second-hand cornet, a kind of horn. When he was in his twenties, Louis switched to playing trumpet.

Louis Armstrong was rarely without his trumpet.

While singing scat, the singer becomes part of the band.

Louis was the first person to record **scat** music. Scat is when the singer uses the voice as an instrument, singing syllables instead of whole words. It might sound like nonsense, but a good singer makes scat sound incredible.

What inspired Louis to invent scat singing? Well . . . he dropped his sheet music during a recording session! He couldn't remember the words, but he knew he had to keep going, so he started singing syllables. Louis's scat style sounded great, and soon other jazz musicians were copying it.

Armstrong's performances were enjoyed by audiences of all races and nationalities.

"Music's my language," Louis once said. He traveled all over the world with his trumpet. He couldn't speak other languages, but everyone understood Louis Armstrong when he blew on his horn.

Louis Armstrong

Born: 1901 in New Orleans, Louisiana

Instrument: Trumpet, vocals

First recording: Age 22

First band: Louis Armstrong and His Hot Five

Popular songs: "Hello, Dolly," "What a Wonderful World," "Mack the Knife"

Died: July 6, 1971, in Queens, New York

Ella Fitzgerald

Louis Armstrong may have invented scat, but Ella Fitzgerald took that style of singing and did amazing things with her voice. Ella's voice was her instrument.

Ella Fitzgerald

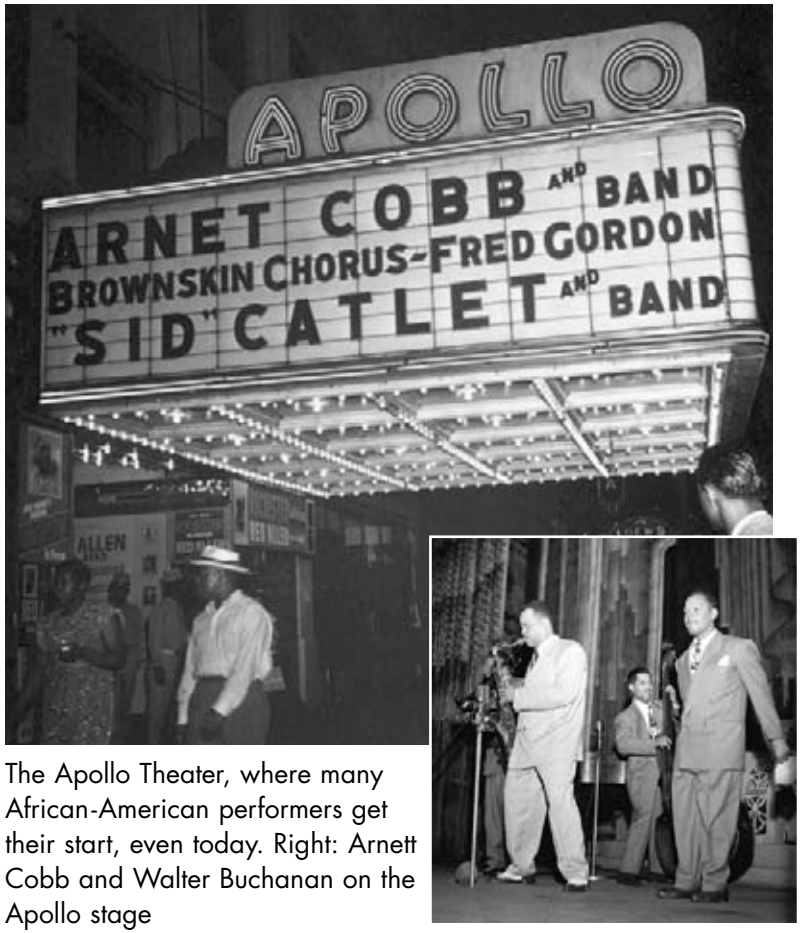
Born: 1917 in Newport News, Virginia

Popular Songs: "Stompin' at the Savoy," "A-Tisket, A-Tasket"

Awards: Thirteen Grammy Awards; National Medal of Arts for Lifetime Achievement (1987)

Died: 1996

Ella started singing at jazz clubs in Harlem, in New York, when she was just seventeen years old. She wanted to be a tap dancer, and she'd entered a talent contest at the famous Apollo Theater. When her dancing didn't **woo** the crowd, she started singing instead. It was her first time singing in public, and she won the talent contest.



The Apollo Theater, where many African-American performers get their start, even today. Right: Arnett Cobb and Walter Buchanan on the Apollo stage

Ella captured many hearts with her warm, versatile voice.

Ella went on to sing at popular clubs all over the country—and all over the world. She was a regular at the Savoy, one of the hottest jazz clubs in New York City. She started singing with **bebop** bands, a kind of jazz that first became popular in the 1940s. Bebop has a beat that makes you want to move, and Ella's voice moved with the beat. The whole time she was singing bebop and scat, Ella improvised. She got on stage with some of the best jazz musicians in the world and jammed.

Some people call Ella Fitzgerald the Queen of Scat. In 1979 she was named one of the most talented American performers who has ever lived. In 1987, she won the National Medal of Arts. Listen to her sing "A-Tisket, A-Tasket" and you'll hear why she's the Queen of Scat.

Duke Ellington

His name was Edward Ellington, but ever since he was a teenager, people called him "Duke." He dressed with style and always looked elegant, and he brought style and sophistication to his jazz music, too.

Duke's childhood piano teacher gave up trying to teach him when he was only seven years old. So he decided to teach himself how to play the piano. Later, he taught himself to read music, too.

Duke Ellington started performing in jazz clubs when he was eighteen years old. When he was twenty-four years old, he moved to New York and started playing at the Cotton Club in Harlem.

Duke was a composer who wrote music that was more melodic than most jazz music in the 1930s and 1940s. He was an exceptional pianist and bandleader, known for his "swing" style.

One of his most popular songs is "Take the 'A' Train," a song he wrote about taking the New York City subway to his home in Harlem. Another well-known song is "It Don't Mean a Thing," a song with lyrics that say "It don't mean a thing if it ain't got that swing."

Duke wrote more than one thousand songs during his life. Some of them were complicated jazz symphonies written for entire orchestras. The symphony *Black, Brown, and Beige* is about the history and music of African Americans.

Duke Ellington and His Orchestra is one of the best-known bands in jazz history. They toured many countries. The music that Duke Ellington wrote has been played by countless bands all over the world.

Duke Ellington

Born: 1899 in Washington, D.C.

Career: Composer, bandleader, and pianist.

Band: Duke Ellington and His Orchestra

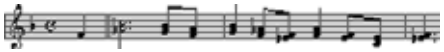
Well-Known Songs: "Take the 'A' Train"

Awards: Lifetime Achievement Award, NARAS*; Presidential Medal of Freedom (1969)

Died: 1974

*National Academy of Recording Arts and Sciences

Other Jazz Greats

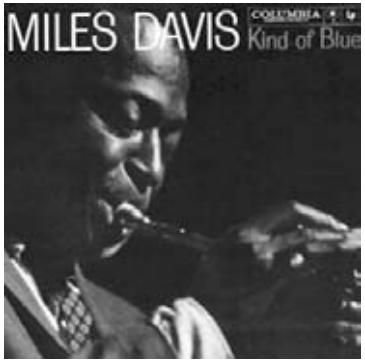


You've met three of the biggest names in jazz—Louis Armstrong, Duke Ellington, and Ella Fitzgerald. There are many other jazz artists from the past, some of which we'd like you to meet.

Billie Holiday sang the blues. She did amazing things with her voice. Sometimes she sang slowly and you could hear sadness in her voice. Other times she sang bouncy, energetic songs.

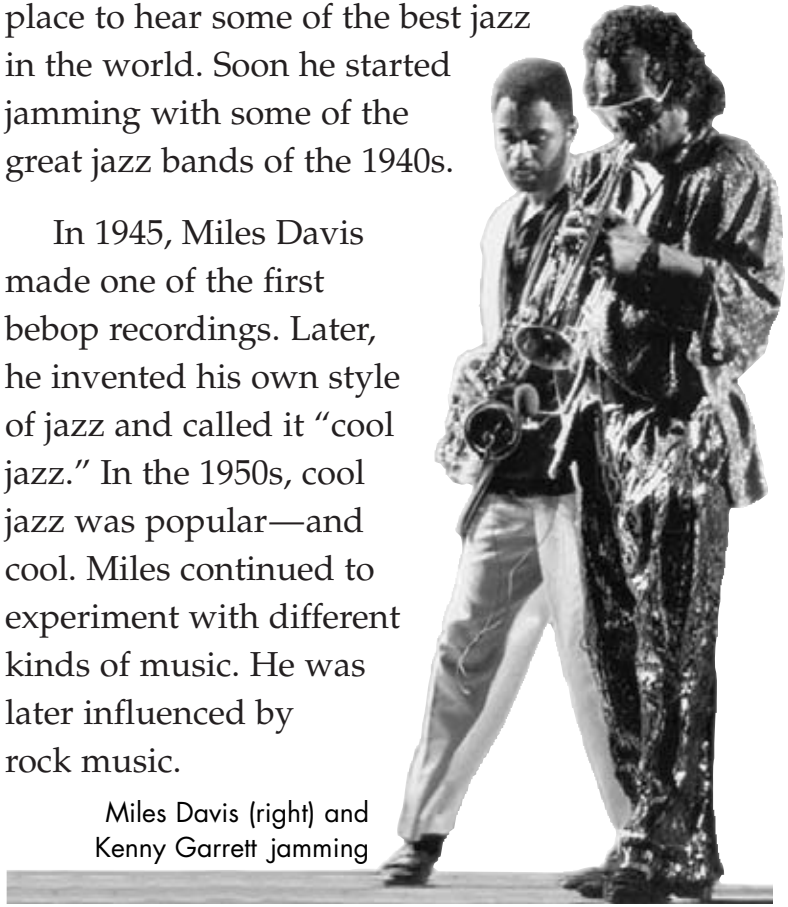
Billie Holiday recorded "Strange Fruit," a heartbreaking song about racism.

Billie toured in the late 1930s with a popular band led by Artie Shaw. All the musicians in Artie Shaw's band were white. Many times, she was not allowed to stay at the same hotel as the rest of the band. Many restaurants would not let her eat with the rest of the band. She was one of the most popular singers in the United States, yet Billie Holiday met racism in many of the cities she visited.



Miles Davis was a trumpet player and a songwriter. His parents sent him to the famous Juilliard School of Music in New York. They wanted their son to study classical music. But Miles loved jazz. New York City was a great place to hear some of the best jazz in the world. Soon he started jamming with some of the great jazz bands of the 1940s.

In 1945, Miles Davis made one of the first bebop recordings. Later, he invented his own style of jazz and called it "cool jazz." In the 1950s, cool jazz was popular—and cool. Miles continued to experiment with different kinds of music. He was later influenced by rock music.



Miles Davis (right) and Kenny Garrett jamming

Dizzy's distinctive trumpet helped him hear himself better.

Dizzy Gillespie got his nickname from the way he bounced around, joking and dancing on stage. But the name could have easily been applied to his music as well. His music was noted for its speed, energy, and **spontaneity**. In the 30s and 40s, he collaborated with Thelonius Monk, Ella Fitzgerald, Duke Ellington, and saxophonist Charlie Parker. It was a time crowded with **innovators**.

In 1953, someone accidentally fell on Dizzy's trumpet, bending the bell backward. Dizzy found that he liked the sound of the bent trumpet, and from then on, he had trumpets specially built in that shape. His bent trumpet, plus his balloon-like cheeks, became his trademark. Near the end of the twentieth century, Dizzy was widely known and respected. He was even invited to play at the White House.

John Coltrane played tenor saxophone during the 1930s and 1940s in the swing and bebop styles. Like many musicians of the time, he had troubles with drug and alcohol abuse. But John was fortunate to overcome those troubles in the 1950s. He strongly believed that his religion and faith in God had helped him through his addictions. After conquering these problems, John devoted his music to expressing spirituality and faith.

John Coltrane's music is complex, yet smooth and moving. His most famous recording, "A Love Supreme," is gentle and prayerful, yet it moves with sophisticated rhythms. Later in his life, John began to experiment with more free-form improvisation that moved away from traditional rhythms and melodies. Some of John's many fans didn't like this music. But this experimental style was the beginning of modern free-form jazz.

Dave Brubeck is one of the most well-known pianists of all time, as well as an accomplished composer. He was born in 1920 in California. His father was a cattle rancher and his mother was a pianist and music teacher. Even though he played with local dance bands as a teenager, Dave began college with the idea of becoming a veterinarian. He worked as a jazz musician only to pay his way through college. But his love of jazz finally made him decide that he had to make music his life, and he began studying music and composition.

In 1958, he formed the famous Dave Brubeck Quartet. Their hit song "Take Five" was the first ever million-selling jazz tune. The music of Dave Brubeck is still relevant today, and he continues to perform before huge crowds and create new music into his 80s.

The best way to hear jazz is at a live performance.

Jazz Today

Who's making jazz music today? The answer is: Lots of people!

The jazz style of music has influenced thousands of musicians—even those who do not play jazz. Classical music, rock and roll, and hip-hop all use jazz rhythms, melodies, and improvisational styles. Jazz is also influenced by many other styles of music. Today, jazz performers blend their music with Latin rhythms and instruments, African drumming and singing, Middle Eastern melodies, and music styles from around the world.

Wynton Marsalis (right) and his brother, drummer Jason Marsalis

One popular performer is Wynton Marsalis. He plays the trumpet and performs both jazz and classical music. Wynton has won many Grammy awards and performed at sold-out concerts. The entire Marsalis family consists of talented musicians. Wynton's father, Ellis, is a dedicated pianist and music teacher who taught his sons Wynton, Branford, Delfeayo, and Jason to love and play jazz.

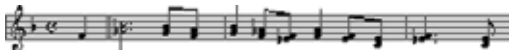
Wynton works to inspire young people to love jazz. He performs in the Jazz for Young People concerts at Lincoln Center in New York.

Many students learn to love jazz through school jazz bands.

Jazz band is a popular activity for many high school students today. Thousands of high school bands compete in a jazz festival in New York City each year. The festival is called Essentially Ellington, named after Duke Ellington.

There are many other jazz band festivals for young people. All over the United States, young people are discovering the wonders of jazz.

Explore More



At the Library

The best way to explore jazz is by listening to it. Ask your local librarian to help you search through the library's record and CD collection. Your librarians, teachers, parents, or friends may like and listen to jazz. They can help you pick out albums.

On the Radio

Many radio stations play jazz for all or part of the day. Tune in and try to find one of these stations. Listen to the announcer so that you can learn the musicians' names. See if you hear some of the musicians listed in this book.

On the Internet

A. In the address window, type *www.google.com.*

B. In the search window, type a word or name you would like to look up, such as *jazz, blues, Ella Fitzgerald,* or *Wynton Marsalis.* Click on "Google Search."

C. Read the colored links. Click on one that looks interesting. When you want to explore more links, click on the "Back" arrow at the top left.

D. Try other searches, such as *Dizzy Gillespie, Dave Brubeck,* or *Apollo Theater.*

Glossary

bebop	a style of jazz that stresses strong rhythms and beats with fast melodies and improvisations (p. 12)
improvised	made up as one goes along; created instantly (p. 5)
innovators	people who help create, develop, or invent something (p. 17)
melodic	highlighting the tune as opposed to the rhythm or harmony (p. 4)
plantation	a farm owned by a wealthy person or family where laborers or slaves do the work (p. 5)
quarters	housing for laborers or slaves (p. 5)
scat	singing that uses sounds and syllables instead of whole words (p. 8)
spontaneity	using one's feelings in the moment, rather than planning (p. 17)
woo	win over; make someone like you (p. 11)

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swing, 13, 14, 18

Name _____ Reading a-z

INSTRUCTIONS: Write the main ideas and important details for each of the chapters listed on the chart. At the bottom, write a summary about a chapter of your choice.

Chapter Title	Main Idea	Important Details
Ella Fitzgerald		
Duke Ellington		
Other Jazz Greats		
Jazz Today		
Summary of Chapter:		

JAZZ GREATS • LEVEL V • 1

SKILL: COMPREHENSION

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Name _____

INSTRUCTIONS: For each sentence, circle the verb and underline the adverb. In the box on the right, tell whether the adverb says *how*, *when*, *where*, or *how often*.

1. Dizzy Gillespie was widely known and respected.

2. John Coltrane strongly believed his faith helped him with his problems.

3. Dave Brubeck then decided to make music his life.

4. Rarely was Billie Holiday allowed to eat with the rest of the band.

5. Jazz musicians often jam, or make up music as they go along.

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Name _____ Reading a-z

INSTRUCTIONS: The puzzle below is a cryptogram, where each number from 1 to 26 stands for a letter of the alphabet. In a simple cryptogram, the number 1 would be *A*, 2 would be *B*, 3 would be *C*, and so on. Use the phrase below to figure out the code for this puzzle. Then use the code and the clues to fill in the blanks.

i f	i t	a i n' t	g o t	t h a t	s w i n g
25 22	25 10	17 25 4 10	23 5 10	10 24 17 10	9 13 25 4 23

1. using one's feelings in the moment, rather than planning
   __ __ __ __ __ __ __ __ __ __ __
   9 6 5 4 10 17 4 21 25 10 15

2. highlighting the tune as opposed to the rhythm or harmony
   __ __ __ __ __ __ __
   3 21 2 5 20 25 19

3. people who help create, develop, or invent something
   __ __ __ __ __ __ __ __ __ __
   25 4 4 5 12 17 10 5 8 9

4. made up as one goes along; created instantly
   __ __ __ __ __ __ __ __ __ __
   25 3 6 8 5 12 25 9 21 20

5. a style of jazz that stresses strong rhythms and beats with fast melodies and improvisations
   __ __ __ __ __
   18 21 18 5 6

6. singing that uses sounds and syllables instead of whole words
   __ __ __ __
   9 19 17 10

JAZZ GREATS • LEVEL V • 3

SKILL: VOCABULARY

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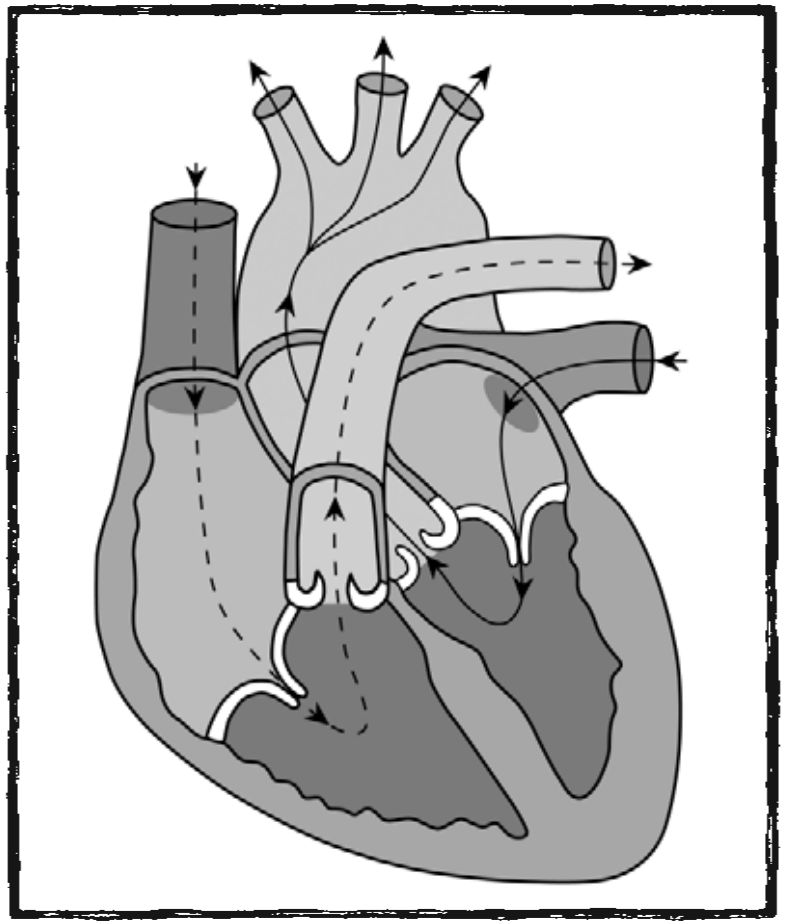
Book of Blood

A Reading A–Z Level V Leveled Reader
Word Count: 1,781



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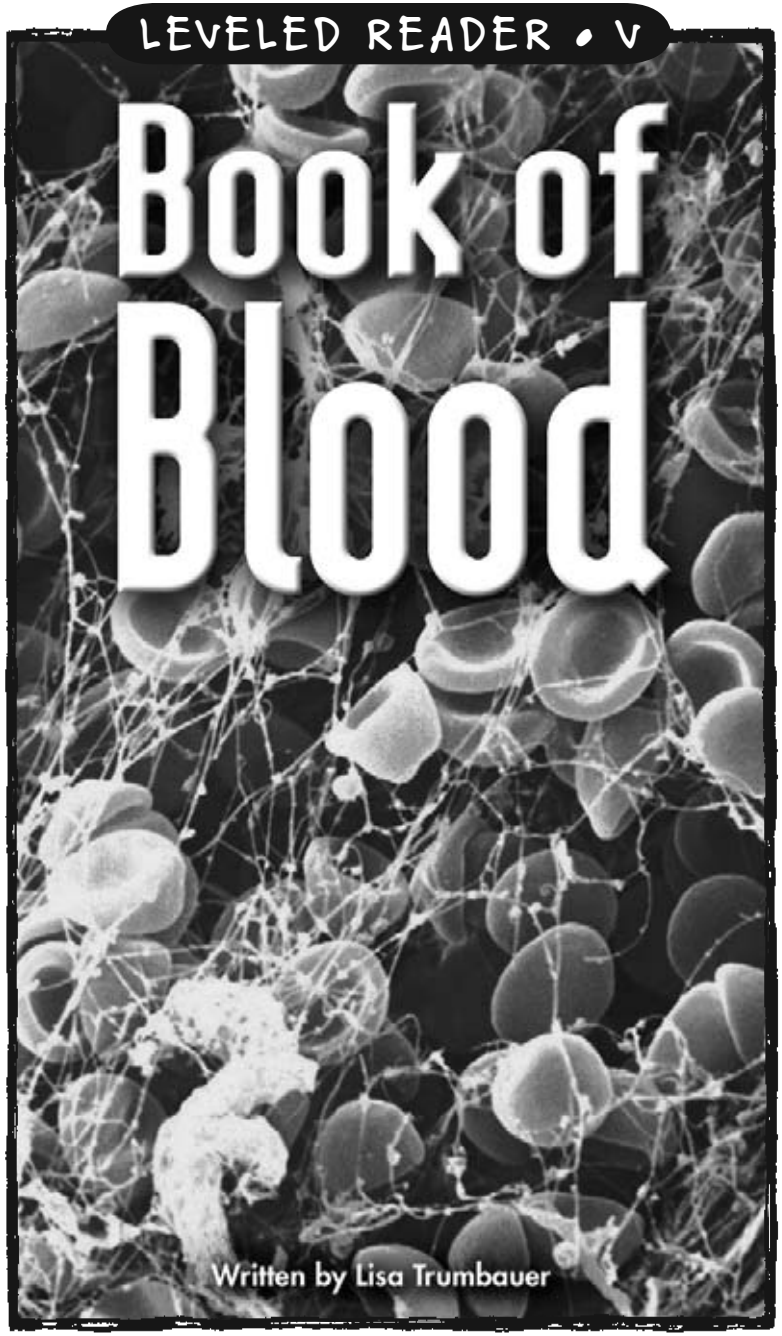

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Book of Blood

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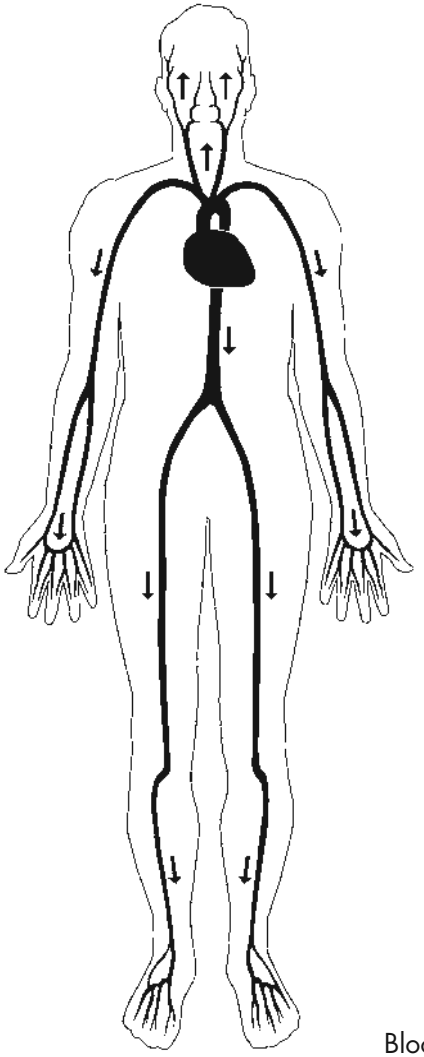
Special Delivery!

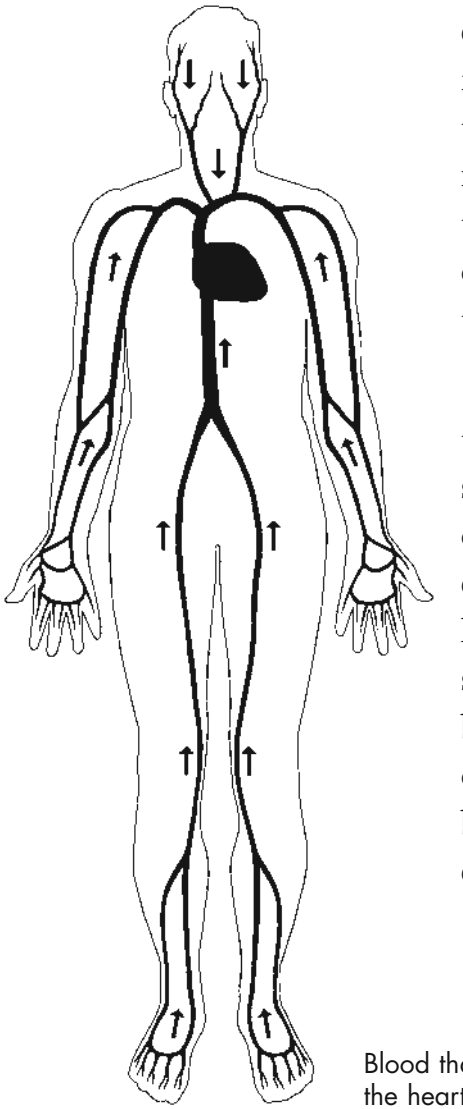
Imagine, if you will, a giant post office. Mail trucks enter at one end, gather new mail to be delivered, and then continue on their journey. The mail trucks drive along their designated routes, dropping off and picking up mail as they go. The trucks then return to the post office, and the whole process begins again.

On a much smaller scale and in a much different way, this **analogy** describes your circulatory system! Your heart is like the main pumping station, or the main post office, and your blood vessels are the roads over which the mail trucks travel. And what are the mail trucks themselves? Your red blood cells!



Blood travels away from the heart.

Let's continue with this mail-delivery analogy. You've probably heard the saying that the mail gets delivered, come rain or come shine. Well, the circulatory system never rests, either. Your heart is always pumping, even when you may feel too exhausted to move. Your blood is always rushing through blood vessels, circulating the blood through your body.

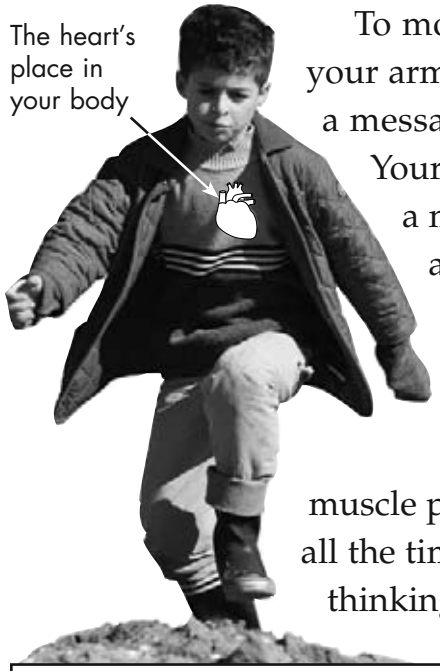


Blood that traveled away from the heart returns to the heart.

Circulation is the movement of something in a circle or circuit, and essentially, that's how your circulatory system works. Your blood travels in a circuit around your body, starting and ending at your heart.

The Pumping Station

Place your hand over your heart, and what can you feel? You can feel your heart in action! Your heart is like command central or the main pumping station for your circulatory system. The heart is a muscle, and it is about the same size as your fist, but the heart is unlike any other muscle in your body.



To move the muscles in your arms and legs, you send a message to your brain. Your brain then sends a message, which activates the muscles. But your heart muscle doesn't need you to tell it what to do. Your heart muscle pumps on its own all the time—without you thinking about it!

Blood Bonus

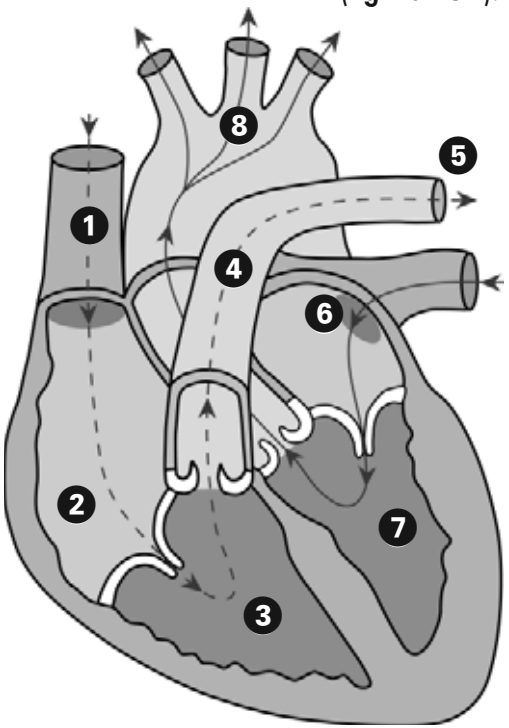
Your heart muscle contracts about 100,000 times every 24 hours! That's 700,000 contractions a week and 36.4 million contractions a year. Imagine working around the clock without taking a break!

The heart's main function is to pump the blood that flows through your body, keeping the blood constantly on the move. The diagram below shows how the blood pumps through the heart.

❶ Blood, which is low on oxygen, flows into the heart from the body through a vein (**vena cava**).

❷ The vena cava delivers the blood to the upper chamber of the heart (**right atrium**).

❸ From the right atrium the blood flows through a valve into a lower chamber (**right ventricle**).



❹ From the right ventricle, oxygen-poor blood pumps out of the heart and into the **pulmonary artery**.

❺ Oxygen-poor blood goes through the pulmonary artery to the **lungs**, where the blood picks up fresh oxygen.

❻ From the lungs, pulmonary veins take the blood to the **left atrium** of the heart.

❽ Blood moves from the left ventricle to the **aorta**, the largest artery, which then branches off into other arteries taking the oxygen-rich blood to all parts of the body.

❼ From the left atrium, the blood flows through another valve to the **left ventricle**.

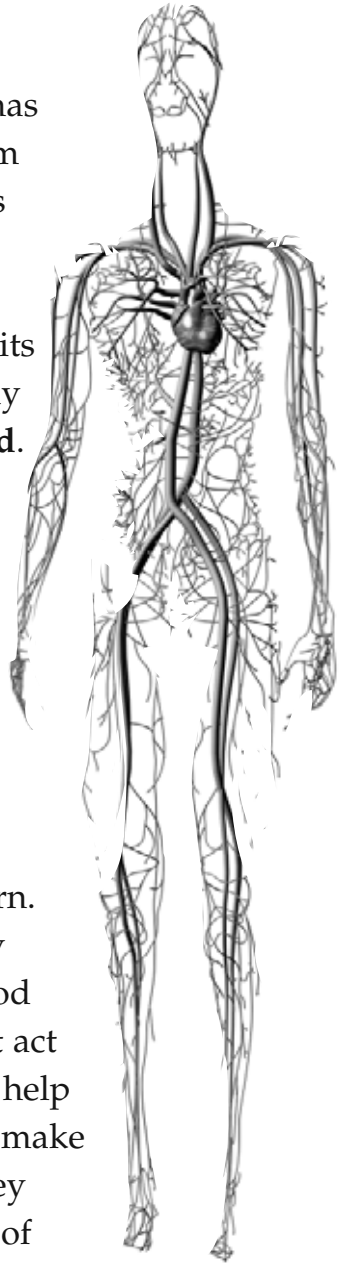
Vessel Voyage

Blood that leaves the heart has been enriched with oxygen from the lungs, which then circulates to the very ends of your body, supplying your body with oxygen. The blood then makes its way back to the heart, its supply of oxygen having been **depleted**. The heart pumps the oxygen-poor blood to the lungs where it gets reenergized with fresh oxygen, and then the journey through the body begins again.

Blood does not flow just anywhere it wants, nor does it float around in a random pattern. Instead, the blood in your body is confined to tubes called blood vessels that act as roads to help blood cells make their journey to all parts of your body.

Blood Bonus

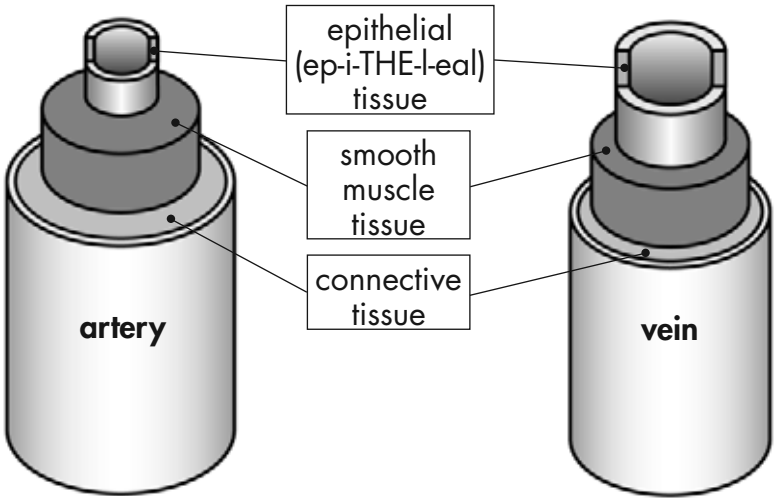
The largest blood vessel in your body is the aorta! It is the largest artery. The largest vein is the vena cava.



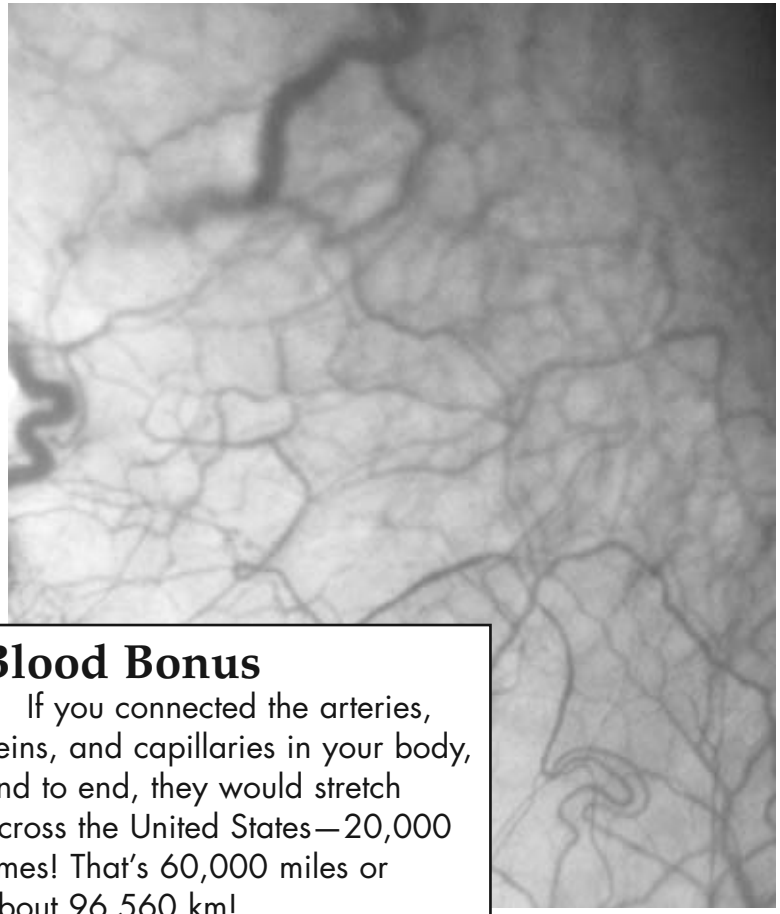
This shows the blood vessels in your body.

Your body has several types of blood vessels. One type of blood vessel is an artery, which carries blood away from the heart. The walls of an artery are thick and strong to handle the pressure of the heart's pumping action. The arteries carry blood loaded with oxygen and nutrients to other parts of your body.

A second type of blood vessel is a vein, which carries blood back to your heart. Veins are not as thick as arteries, because they are less at risk of bursting than arteries. Veins also have valves to prevent blood from flowing backward. The blood carried by veins does not have very much oxygen. This blood is on its way back to the heart and lungs to once again become **oxygenated**.



Veins and arteries are made of these three layers of tissue.



Capillaries in the eye

Blood Bonus

If you connected the arteries, veins, and capillaries in your body, end to end, they would stretch across the United States—20,000 times! That's 60,000 miles or about 96,560 km!

A third type of blood vessel is a capillary, which has walls that are very thin, and the capillary itself is very small. Capillaries transfer the oxygen and nutrients in the blood that flows through the arteries to each living cell in the body. At the same time, the capillaries pass back nutrient-poor blood to the veins.

What Is Your Pulse?

Your **pulse** is actually the movement of blood vessels beneath your skin. When the heart pumps, it sends large flows of blood through the arteries. The walls of the arteries expand to accommodate this surge of blood. You feel the expanding artery wall as your pulse. When you are resting, you should be able to count about 60 to 80 pulse beats a minute.

A doctor listens for a girl's pulse.

Try This!

Count how many times your pulse beats in 10 seconds and multiply that number by 6. The answer you get is called your heart rate. Now try it again, but first hop on one foot for one minute before you count the number of beats. What happened to your heart rate? Exercise gives your heart a workout as well as the other muscles of your body.

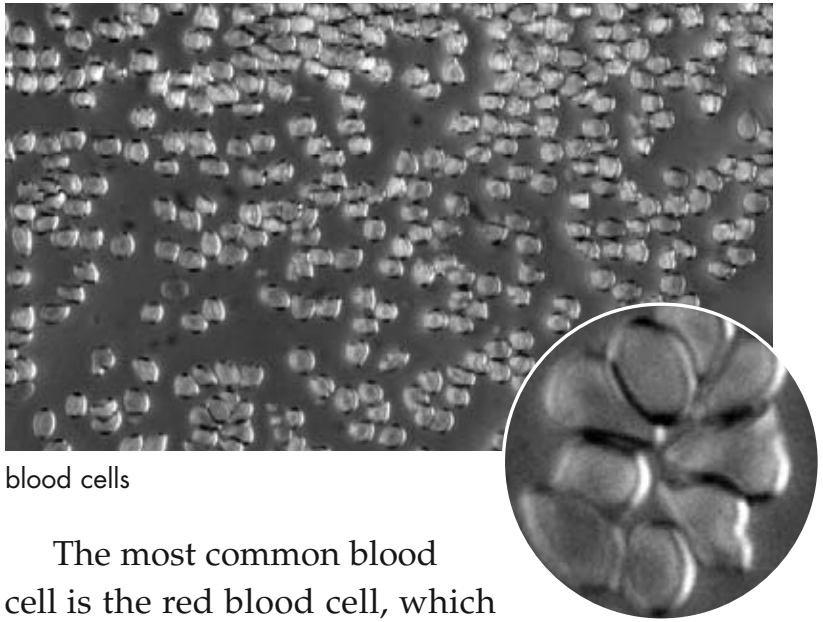
Raising your pulse keeps your heart healthy!

All About Blood

So what, exactly, is blood? If you've ever scraped your knee, you've probably seen the red stuff that oozes from below the skin. To the naked eye, blood might look like nothing more than a thick, red liquid.

Upon closer inspection, however, blood is a complicated substance, loaded with cells that are tiny and cannot be seen until you look at them using a microscope. There are two main types of blood cells—red and white. A soft tissue inside certain bones, called marrow, creates new red blood cells. A small organ near your stomach, called the spleen, is responsible for destroying old blood cells and for creating new white blood cells.

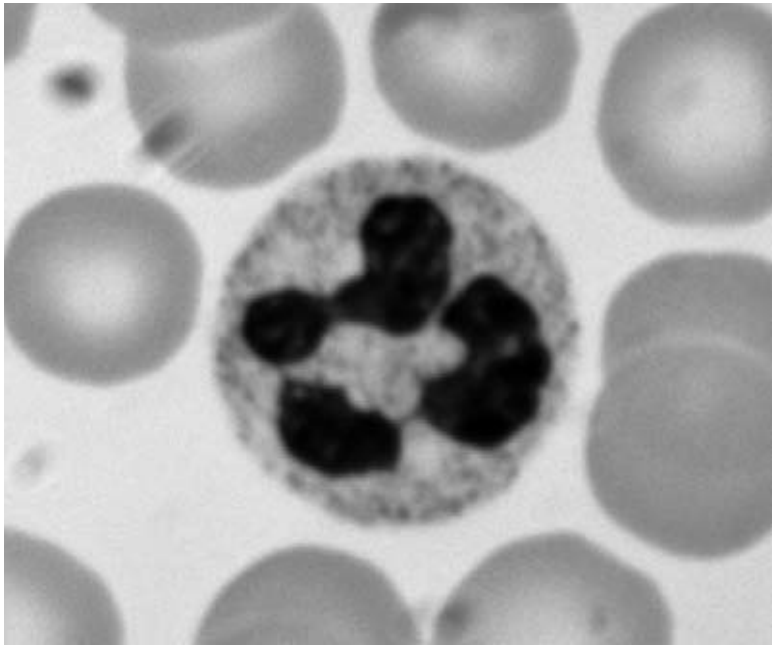
A girl examines the scrape on her knee.



blood cells

The most common blood cell is the red blood cell, which gives blood its red color. Your body has more than 25 trillion red blood cells, and each lives for about four months. Your blood also has white blood cells. The white and red blood cells flow through the body in a yellow liquid called **plasma**.

Your red blood cells look a little bit like donuts, with the holes not fully punched out. Red blood cells are the part of the blood that carries oxygen throughout your body and also carries the nutrients that your body gets from the foods you eat. As red blood cells pass through the lining of your intestines, they absorb the nutrients from digested food. Red blood cells also remove wastes from cells throughout your body.



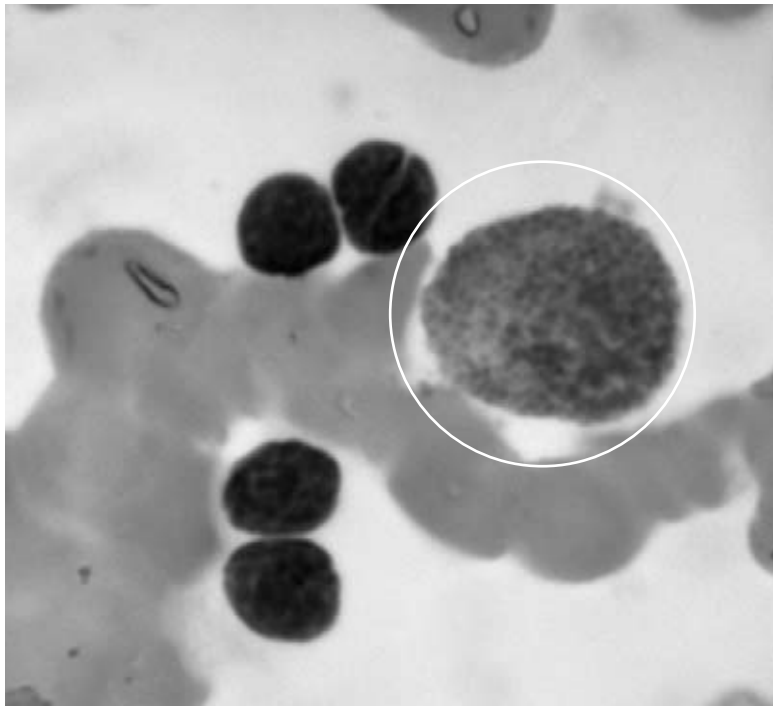
Neutrophil, as seen through a microscope

White blood cells also have an important job—they keep your body healthy by fighting off diseases. Essentially, white blood cells maintain your body's health by gobbling up harmful germs such as **bacteria** and **viruses**!

The most common white blood cell is called *neutrophil* (NEW-tro-fill). These white blood cells are the look-outs, the guardians, of your body. They are always searching for harmful germs that will make you sick. When they find these germs, they wrap themselves around the germs—then they eat them!

Another type of white blood cell is called the *lymphocyte* (LIM-fo-site), which produces *antibodies* to help your body combat viruses and bacteria. An antibody is a chemical that helps destroy harmful bacteria and viruses. So, instead of eating the germs, the lymphocyte tries to wipe them out using chemical warfare.

A third type of white blood cell is called a *monocyte* (MON-o-site), which works like the neutrophil, by killing unknown particles in your blood by eating them.



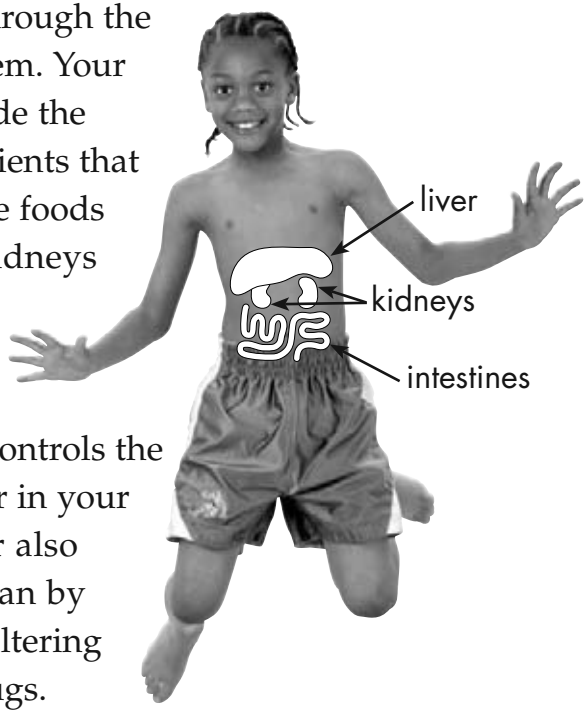
Lymphocyte

Platelets help form scabs, so cuts can heal.

Along with red blood cells, white blood cells, and plasma, blood has one more very important component—*platelets*. Platelets are smaller than red and white blood cells, but their job is crucial to the circulatory system. Platelets help blood to **clot**.

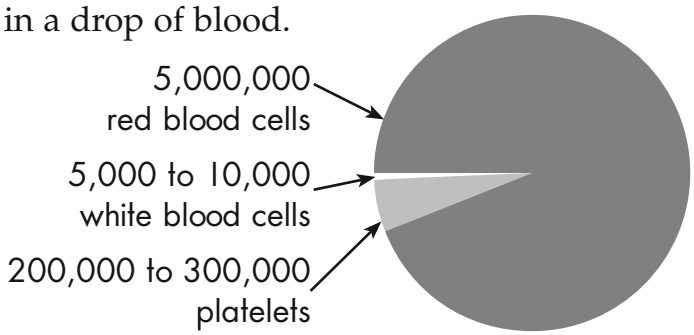
If you've ever cut yourself, you might have noticed that your blood eventually stops flowing. The platelets clot, or cause the blood cells and plasma to clump together, blocking the flow of the blood. Fibers also form over the skin, further blocking blood flow. Eventually, these fibers form a scab over the cut, allowing the skin underneath to heal.

Many parts of your body are affected by the flow of blood through the circulatory system. Your intestines provide the blood with nutrients that you get from the foods you eat. Your kidneys remove waste products from your blood, and your liver controls the amount of sugar in your blood. The liver also keeps blood clean by removing and filtering poisons and drugs.



A Drop of Blood

This pie graph compares the number of red blood cells, white blood cells, and platelets in a drop of blood.



You can see blood vessels on the underside of your wrist, just below the skin.

The Color Red . . . or Purple?

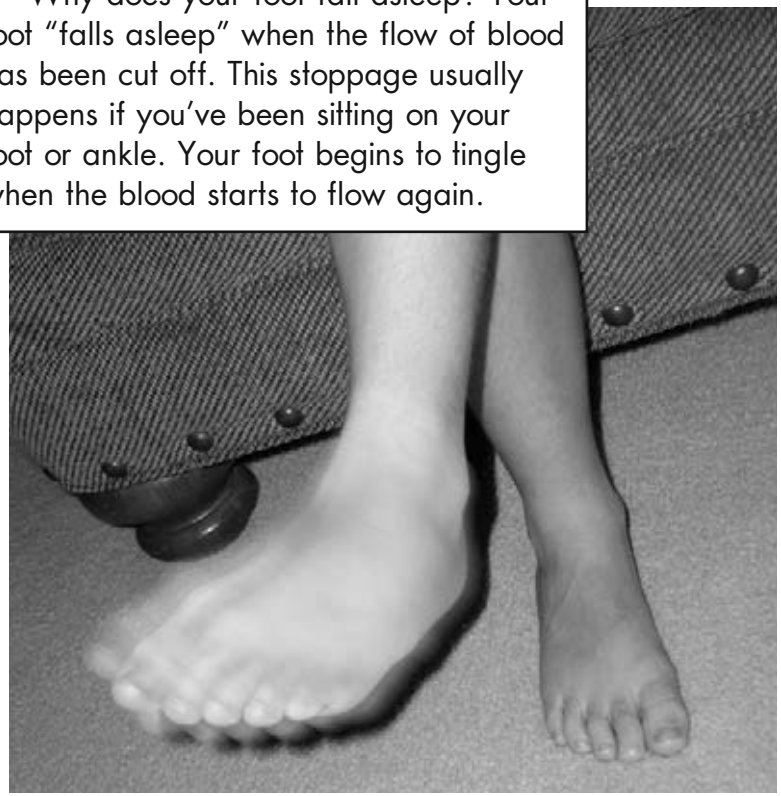
If you look closely at your hand, you can see blood vessels beneath the skin. The blood vessels, however, don't appear red, which is the color of blood. Instead, they are a dark, purplish color. Why are blood and the blood vessels two different colors?

It actually has to do with oxygen. Red blood cells contain a **protein** called hemoglobin (HE-mo-glow-bin), which has iron in it. Iron enables the blood to absorb oxygen more easily. When iron and oxygen mix, the hemoglobin protein in the blood turns red. So that is why blood is red, especially when it is released from a cut or puncture.

When blood starts to flow back to the heart, it has delivered most of its oxygen to the rest of the body. The blood lacks oxygen, which gives it a darker color. So the blood vessels that serve as veins appear darker in color, too, or purplish. The layer of skin also distorts the color of blood and blood vessels.

Blood Bonus

Why does your foot fall asleep? Your foot "falls asleep" when the flow of blood has been cut off. This stoppage usually happens if you've been sitting on your foot or ankle. Your foot begins to tingle when the blood starts to flow again.



After your foot falls asleep you may feel "pins and needles" until the blood flow is normal again.

This boxer has a bruise on his eye and a busted blood vessel in his nose.

Bruises also appear purple in color. A bruise occurs when a blood vessel breaks beneath your skin, but your skin doesn't break. The blood collects under the unbroken skin, giving your skin a purplish hue. White blood cells swarm in to eat the pooling blood and over time, the blood breaks down into smaller and smaller pieces, until eventually the blood under the skin is gone. The bruise, or "black-and-blue mark," has disappeared.

Know Your Type

Not all blood is the same. Blood can be categorized and sorted into four types. A substance called an antigen determines your blood type. Antigens cause your blood to make infection-fighting chemicals. There are two kinds of antigens—A and B. If your blood has the A antigen, you have Type A blood. If your blood has the B antigen, you have Type B blood. If you have both antigens, your blood is Type AB; and if you have neither antigen, your blood is Type O.

It is important to know your blood type. If you are ever in an accident and lose a lot of blood you will need a transfusion to replace your lost blood. You can only accept blood from someone who has your blood type or Type O blood. People with Type O blood are called universal donors since anyone can accept their blood.

When people donate blood, it is put into blood banks for people who need transfusions.

Children keep their hearts in shape with exercise.

Conclusion

Have you ever heard the expression that your body is like a well-oiled machine? Well, if that's true, then your blood is the oil that makes your body run. Your heart is the engine that pumps the oil through your body. And your blood vessels are the tubes through which the blood flows. All together, your heart, your blood vessels, and your blood make up your body's circulatory system.

Glossary

analogy *(n.)*	comparison of two things not normally thought of as alike (p. 4)
antigen *(n.)*	substance that helps the body fight infection (p. 21)
bacteria *(n.)*	one-celled organisms that can cause disease (p. 14)
circulation *(n.)*	movement in a circle or circuit within the body (p. 5)
clot *(v.)*	to thicken and make a liquid stop flowing (p. 16)
depleted *(v.)*	to be emptied (p. 8)
oxygenated *(v.)*	to be mixed with oxygen (p. 9)
pulse *(n.)*	heart beat felt through blood vessel walls (p. 11)
plasma *(n.)*	the fluid blood cells flow in (p. 13)
protein *(n.)*	an essential part of all cells in the body (p. 18)
transfusions *(n.)*	taking blood donated by people and injecting it into patients at the hospital (p. 21)
viruses *(n.)*	tiny organisms that infect and reproduce inside living cells (p. 14)

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Name _____ Reading a-z

INSTRUCTIONS: Before reading the book, answer "Yes" or "No" to each question. After reading the book, answer the questions again and compare your answers.

Prior Knowledge Survey

Yes = I agree with the statement.
No = I do not agree with the statement.

Before Reading	Topic: Circulatory System	After Reading
	Blood moves in a circuit around the body, starting and ending with the heart.	
	The heart is a muscle that works without you telling it to.	
	The largest artery in the body is the aorta.	
	The heart is about the size of a fist.	
	The heart and lungs work together to move blood and oxygen through the body.	
	The heart works harder when a person exercises.	
	Red blood cells carry oxygen to parts of the body.	
	White blood cells fight infection.	

BOOK OF BLOOD • LEVEL V • 1

SKILL: PRIOR KNOWLEDGE

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Name _____

Reading a-z

INSTRUCTIONS: Find the main ideas for the chapters below and record them on the chart. You will need to look through the whole chapter to figure out the main ideas. Then look for the most important details that support each main idea and record them in the details column.

Chapter	Main Idea	Important Details
Vessel Voyages		
All About Blood		
The Color Red		
Know Your Type		

BOOK OF BLOOD • LEVEL V • 2

SKILL: MAIN IDEA AND DETAILS

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Name _____

Reading a-z

INSTRUCTIONS: Play this matching game with a partner. Cut up the cards, mix them up, and spread them out face down on the table. Take turns turning over two cards. If the two cards make a pair, you get to keep them. If not, turn them back over so your partner can have a turn.

aorta	largest artery	lungs	provide oxygen to blood
red blood cell	takes oxygen around body	pulse	heartbeat felt under skin
plasma	a part of blood	transfusion	taking blood from one person and giving it to another
white blood cell	fights infection	vena cava	largest vein
hemoglobin	gives blood color	antigen	what determines blood type

BOOK OF BLOOD • LEVEL V • 3

SKILL: VOCABULARY

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Mexico's Fight for Independence

A Reading A–Z Level V Leveled Reader
Word Count: 1,704

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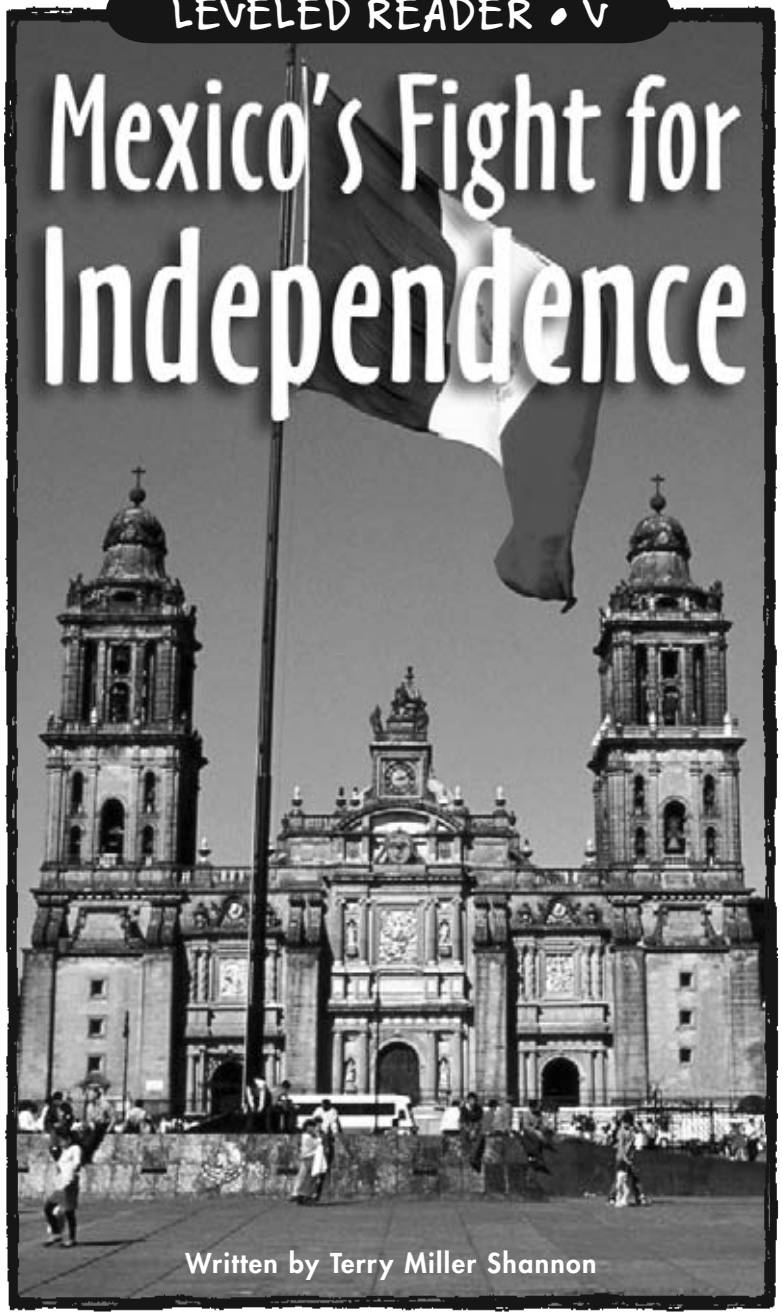
Mexico's Fight for Independence



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Mexico's Fight for Independence

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Cover: Metropolitan Cathedral in Mexico City

Back cover: Mayan ruins at Chichen-Itza

Title page: Metropolitan Cathedral in Mexico City

Table of contents page: Aztec calendar

Mexico's Fight for Independence
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People celebrating Mexican Independence Day in Mexico City

Honoring Freedom

If you're ever in Mexico on September 16, you'll find yourself in the middle of a big celebration. You'll see parades, fireworks, food, confetti, toys, horseback riders, rodeos, bullfights, and many happy people! September 16 is Mexican **Independence** Day; Mexicans are honoring their country's freedom.

What Is Independence?

It is self-rule. As you get older, you will have more **independence** and responsibility. You will rely on yourself, decide what's important to you, and make rules to live by.

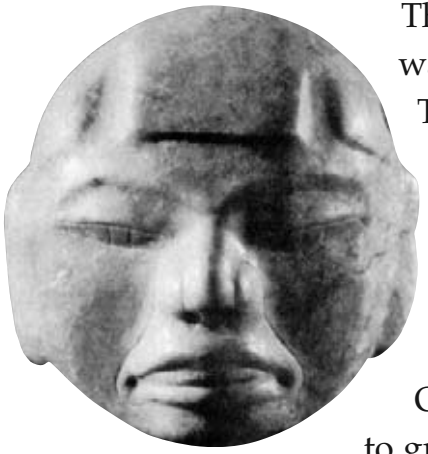
In the case of Mexico, when the country won its independence, Mexicans were responsible for making their own laws. Freedom like that is worth much sacrifice and work.

The First People in Mexico

The land that we now call Mexico, long before Mexico became a country, was occupied by groups of people living in tribes. These people were the **native** people of Mexico who were born there before people from other lands arrived. This book is about the people of Mexico and their fight for independence.

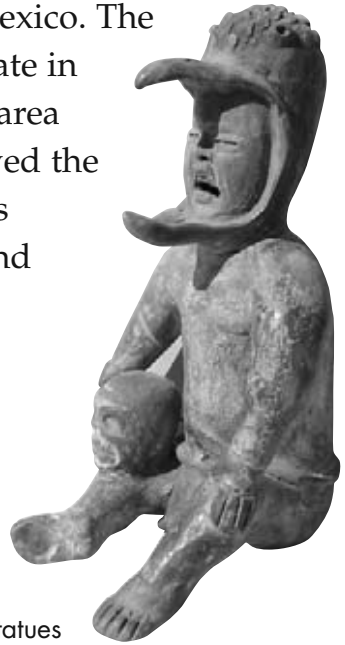
There were three major groups or **civilizations** in early Mexico. Each group had a particular way of living. For many years they hunted animals and gathered wild plants for food. Eventually, they began to farm to feed the people in their villages. Their most important crop was maize, or corn.

maize



The first great civilization was the Olmec (ol-MEK). They lived in the coastal lowlands along the Gulf of Mexico. The climate in that area allowed the Olmecs to grow and harvest maize twice a year. The abundant food production allowed the civilization to grow strong.

No one knows exactly why the Olmec civilization ended around 200 B.C.


Olmec statues

Ruins such as this pyramid tell much about Mayan civilization.

The next major civilization, which started around A.D. 300, was the Mayan. By around A.D. 900, the Mayans were thriving. They excelled in architecture and art. They also made astronomy tables that were quite accurate, and developed a mathematical system that included zero. (Zero was an advanced concept for that time.) Unlike the Olmecs, the Mayans left written records of their lives so we know much more about them. But like the Olmecs, the Mayans were another advanced civilization that suddenly and mysteriously disappeared.

Tenochtitlán, an early Aztec city

The third great Mexican civilization was the Aztec (as-TEKS). By 1430, the Aztecs ruled the Valley of Mexico, and then they spread over the entire country. They built an impressive city called Tenochtitlán (te-no-ch-tee-TLAN), which was essentially Mexico's capital city. Tenochtitlán was on an island in Lake Texcoco (teh-ko-KO). The city had 200,000 residents, with 400,000 more living nearby. In the early 1500s, there were about 1.2 million people living in the Valley of Mexico, the area Mexico City now occupies.

In 1517, a Spanish ship led by Francisco Hernandez de Cordova (fran-sis-CO er-nan-DEZ deh cor-doh-BA) sailed from Spain to Mexico. Mexico's native peoples had never seen white-skinned people, sailboats, cannons, gunpowder, or horses. They believed the Spaniards were gods who were led by Quetzalcoatl (keht-sahl-coh-ATL), a god of the tribes that the Aztecs had conquered. The Aztec emperor, Montezuma (mon-tae-zoo-MA), gave the Spaniards gifts of jewelry made of precious stones, silver, and gold. The gifts only made the Spaniards greedy for more riches. Before returning to Spain, they fought native tribes to take even more riches back home.

More Spaniards arrived by sea in April 1519—this time they were led by Hernán Cortés (er-NAN kor-TEZ). Cortés hoped to take Mexican land for himself.

Spanish Rule

When Cortés and his men, along with native enemies of the Aztecs, marched into Tenochtitlán, they were amazed by the city's beauty, with every building painted white. Montezuma gave dinner parties for the Spaniards and invited them to stay. Cortés repaid Montezuma's hospitality by imprisoning the Aztec ruler. Cortés' men killed the Aztec leaders. Later, Montezuma was killed, either by the Spaniards or by his own men who were angered at his weakness. Soon more Spanish arrived to fight the Aztecs.

In the meantime, the Aztecs began dying of smallpox, a disease brought to Mexico by the invaders. The Aztecs had no defenses against the disease. By the time the Spaniards conquered the Aztecs, two-thirds, or about 130,000, of the people of Tenochtitlán were dead.

Ruins at Tenochtitlán

Catholic churches in Mexico are reminders of Spain's religous influence.

By 1550, the Spanish ruled Mexico. Diseases such as smallpox brought from Europe weakened the natives. There were about 20 million native people in Mexico when Spain conquered the country. One hundred years later, there were only about 1.2 million natives left in all of Mexico.

Spain ruled for three centuries, calling the area New Spain. The conquerors' main goal was wealth, so they stole Mexican treasures. They also set up a system in which Spanish **immigrants** owned the land, and they made the natives their slaves. This created two classes of people in Mexico: the very rich and the very poor.

Today, people are free to protest in the streets of Mexico.

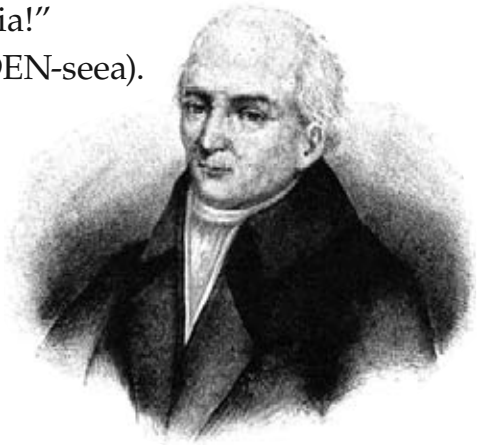
Over the years, the Spanish immigrants married the natives of Mexico. Their children were a mix of Spanish and native blood. As time went by, these mixed-blood people became the majority. They considered themselves true Mexicans, not Spaniards or natives.

By the beginning of the 1800s, the Mexican people yearned for their country to become independent. They were inspired by the way other countries fought to win freedom. Mexicans no longer wanted Spain to rule their country; they wanted to be a free country led by Mexicans. For that, they'd need a **revolution**, or a fight to replace the Spanish rulers with their own form of government.

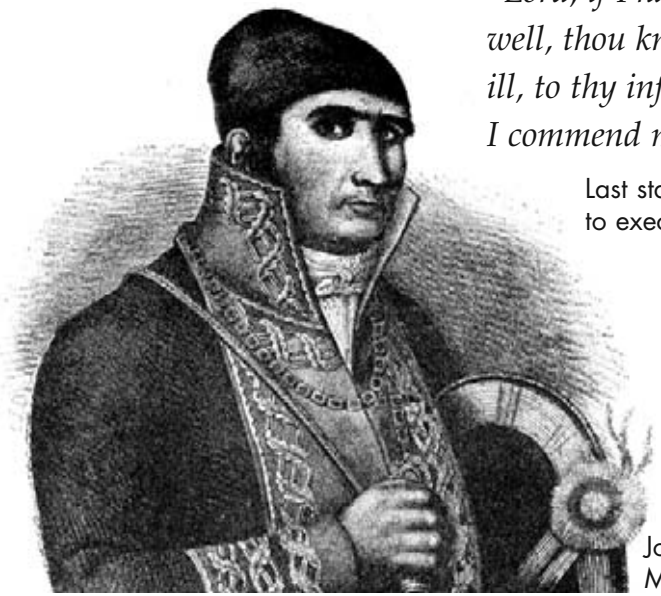
▼ ▼ ▼ **Revolution**! ▼ ▼ ▼

The **Creoles** (KREE-ols), were the first group of Mexicans to think about revolution. They were born in Mexico to parents from Spain who had settled in Mexico. Compared to people living in Mexico and born in Spain, the Creoles were regarded as second-class citizens. They didn't have the same privileges as those born in Spain. They were unhappy with their lack of political power and began to plan a revolution. The Spaniards learned of their plans and the Creoles were forced to begin the revolution ahead of schedule.

Very early on September 16, 1810, a priest named Miguel Hidalgo y Costilla (me-GEL e-thal-GO e kos-tea-ya) rang the bell of his church. He yelled: "Viva Mexíco!" (BI-ba ME-he-co) and "Viva la independencia!" (BI-ba la in-deh-pen-DEN-seea). This is known as the cry of independence. Hidalgo was calling out to Mexicans, urging them to fight Spanish rule and to reclaim Mexico for their own.



Miguel Hidalgo y Costilla



"Lord, if I have done well, thou knowest it; if ill, to thy infinite mercy I commend my soul."

Last statement prior to execution in 1815

José María Morelos y Pavón

By the end of October 80,000 people had joined Hidalgo's army. Hidalgo's soldiers conquered two large cities and a few others, but they were defeated in the biggest city—Mexico City. In 1811, Hidalgo was captured and killed by the Spanish, but the fight for independence continued.

The next leader of the rebellion was another priest, named José María Morelos y Pavón (ho-ZE ma-REE-a mo-REH-los e pah-BON). He issued the first formal call for independence at a Congress he held in 1813. He wrote up a constitution for a Mexican **republic**. However, in 1815, Morelos was also captured and killed by the Spanish.

For the next five years, there was no real leader of the Mexican revolution, and by 1816, Spanish soldiers had killed most of the rebels. Spain's king forced Mexicans to pay taxes, and the king's harsh actions caused many Mexicans who hadn't taken part in the revolution to now turn against Spain.

In 1820, there was a revolution in Spain, and the Creoles believed this would be a perfect time to try again for independence. In 1821, a Spanish colonel named Agustín de Iturbide (ah-gus-TEEN deh e-tur-BEE-deh) was sent with 2,500 Spanish soldiers to stop a Mexican rebellion in central Mexico.

Spanish troops in Mexico City

A group of powerful Creoles approached Iturbide and convinced him to betray his Spanish commander. He agreed to fight alongside them with his army in the Creoles' fight for independence. In exchange, Iturbide was to have the power to dictate the terms of Mexico's independence.

In September of 1821, Iturbide led troops to conquer Mexico City, the center of Spanish government. He declared himself the head of the new independent government of Mexico. Spanish officials escaped and returned to Spain.

Mexico's National Palace is built on the site of Montezuma's palace.

Agustín de Iturbide

Mexico was now independent! The Mexicans fought for their freedom for 11 years. They may have lost as many as 600,000 lives. At last, their long years of sacrifice had paid off—they were free and independent.

But the Creoles couldn't agree on how Mexico's government should work. Some people wanted a monarchy, ruled by a king. Others desired a republic like the United States, governed by Mexico's citizens. Iturbide decided for everyone in 1822, when he established a monarchy by declaring himself Emperor Agustín I. He was not a good ruler, and the people turned against him. By 1823, he was dethroned.

Republic

After Iturbide was **dethroned**, a Congress was established. This Congress wrote a constitution for a democratic country, similar to the United States. However, there were still major disagreements. One group wanted a strong central government and wanted Roman Catholicism to be the national religion. Another group wanted the states to have more power, and they wanted to be free to worship as they wished.

At last in 1824, the groups reached a **compromise**, and Mexico became a republic. They formed a national government led by a two-house Congress. A governor and a legislature led each state. The first president was Guadalupe (hwa-dah-LOO-peh) Victoria.

Guadalupe Victoria

Do You Know?

Mexico's national flag was created in 1821. Green represents independence, white is for religious purity, and red stands for the Spanish who joined Mexicans in the fight for independence, plus the blood of Mexican heroes.

Children in traditional dress performing at Independence Day festivities

Cinco de Mayo

Cinco de Mayo (SIN-ko deh MY-o), May 5th, is not Mexican Independence Day. It celebrates the victory of a small group of Mexicans over the French army at the Battle of Puebla.

▼ ▼ ▼ Celebration! ▼ ▼ ▼

The Mexican people will never forget the people and events that led to their country's independence. Mexican Independence Day is a huge celebration, or **fiesta**, every year throughout Mexico.

Each year, the celebration begins on the night of September 15. People all over Mexico gather in town centers. In Mexico City, around half a million people crowd into the city square.

Everyone watches the clock. At exactly 11:00, the crowd quiets. Mexico's president comes out of the palace onto the balcony. He wears a sash of red, white, and green, and carries a large Mexican flag.

The president rings the same liberty bell that Hidalgo rang when he called the people to fight against the Spanish for their freedom. As Hidalgo did so many years ago, the president shouts, "Viva Mexíco!" and "Viva la independencia!" His voice booms through loudspeakers.

Mexicans gather in city squares to celebrate.

Traditional clothing is just part of the Independence Day festivities.

The crowd screams "Viva Mexíco!" and "Viva la independencia!" while they toss confetti and blow on their horns. Everyone sings Mexico's national **anthem**. Red, white, and green fireworks light the sky. Similar ceremonies take place all over Mexico at the same time.

The next day, September 16, is Independence Day. Mexicans celebrate with parades, feasts, rodeos, bullfights, and horseback riding competitions. Statues of Hidalgo are decorated with red, white, and green flowers. It's a fine celebration in honor of Mexico's long, hard, yet rewarding fight for independence.

Statue of Hidalgo

Independence Timeline

By **15,000 B.C.**: First native inhabitants known to be living in Mexico

1200-200: Olmec civilization prospers

A.D. 300-900: Mayan civilization prospers

1100-1520: Aztec civilization prospers

1325: Aztec city of Tenochtitlán founded on the island in Lake Texcoco

1520: Hernán Cortés conquers Tenochtitlán for Spain.

1520-1810: Mexico is a colony of Spain.

1810: Father Miguel Hidalgo y Costilla leads the revolution against Spain.

1821: Agustín de Iturbide leads the war for independence. Mexico wins independence.

1822: Iturbide is Mexico's first emperor.

1824: Mexico becomes a republic; Guadalupe Victoria is Mexico's first president.

Glossary

anthem	a song of national pride (p. 21)
civilizations	groups of people with a certain way of living (p. 6)
compromise	a decision in which both sides of an argument give up certain things to reach an agreement (p. 18)
Creoles	people born in Mexico whose parents were born in Spain (p. 13)
dethroned	removed from power (p. 18)
fiesta	Spanish word for "festival" (p. 19)
independence	self-governing (p. 4)
immigrants	people who move into one country from another (p. 11)
native	person born in a certain place (p. 5)
republic	a government in which power belongs to the citizens (p. 14)
revolution	removing one government from power to substitute another (p. 12)

Explore More

On the Internet use *www.google.com* to find out more about topics presented in this book. Use terms from the text, or try searching for glossary or index words.

Searches to try: *Mexican history* or *independence*.

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Name _____ Reading a-z

INSTRUCTIONS: Fill in the graphic organizer with the major events you read about in each chapter of the book.

Mexico's Fight for Independence

Early History

Event: _____

Event: _____

Event: _____

Spanish Rule

Event: _____

Event: _____

Event: _____

Event: _____

Event: _____

Revolution!

Event: _____

Event: _____

Event: _____

Event: _____

Event: _____

Event: _____

Republic

Event: _____

MEXICO'S FIGHT FOR INDEPENDENCE • LEVEL V • 1

SKILL: SEQUENCE EVENTS

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Name _____

Reading a-z

INSTRUCTIONS: Use the answers to the clues to complete the phrase about Mexico.

												X			
40	8	48	57		27	7	63	16		14	33	29	60	12	22

the disease that killed most of the Aztecs

S	M	A	L	L	P	O	X
9	61	43	50	21	38	67	29

a decision in which both sides give up something to agree

1	8	23	19	46	39	30	53	5	16

a song of national pride

3	45	20	54	33	11

the way a group of people lives

12	34	44	59	40	60	6	49	66	28	58	15

the most important native crop

14	31	55	17	62

people born in Mexico whose parents were born in Spain

4	42	51	18	27	37	10

replacing one government with another

25	32	63	22	56	65	68	47	36	13

people who move into one country from another

7	24	35	52	57	64	26	48	41	2

MEXICO'S FIGHT FOR INDEPENDENCE • LEVEL V • 2

SKILL: VOCABULARY

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Ancient Cliff Dwellers

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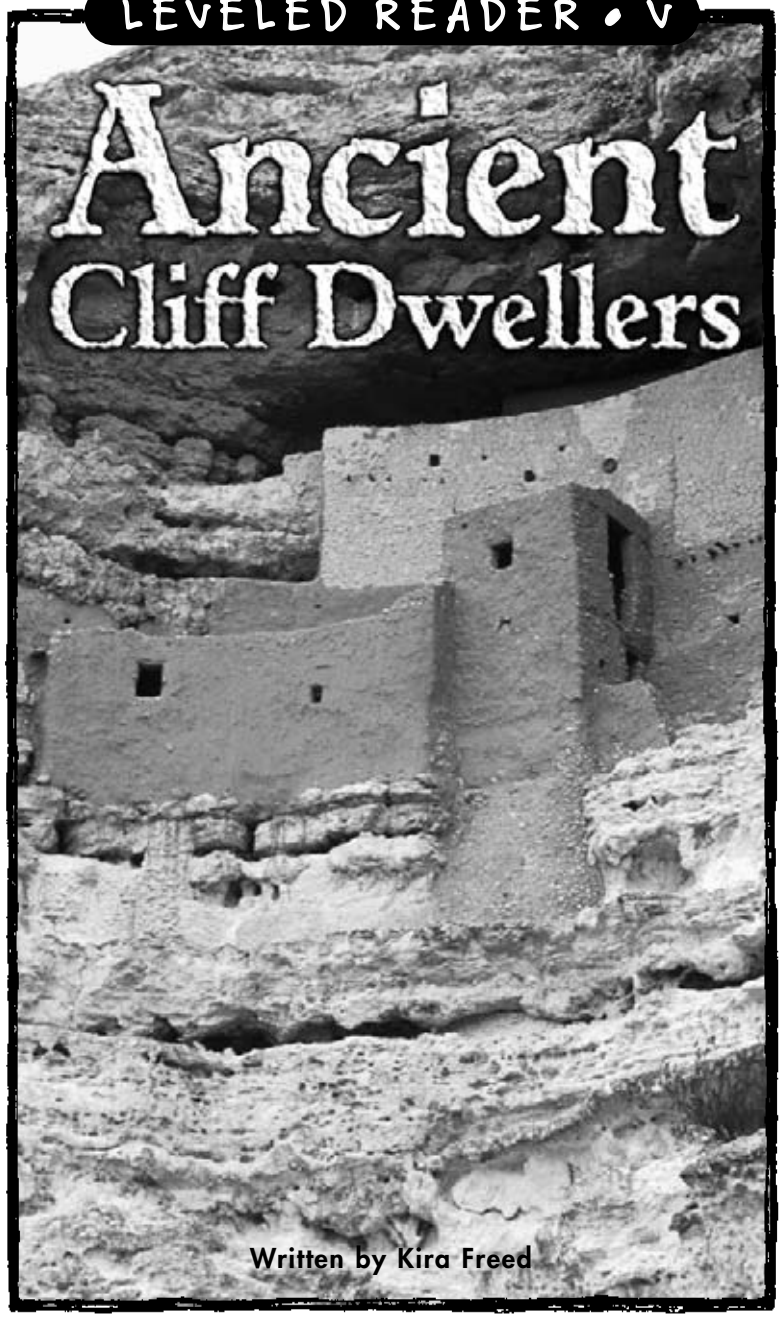

Written by Kira Freed

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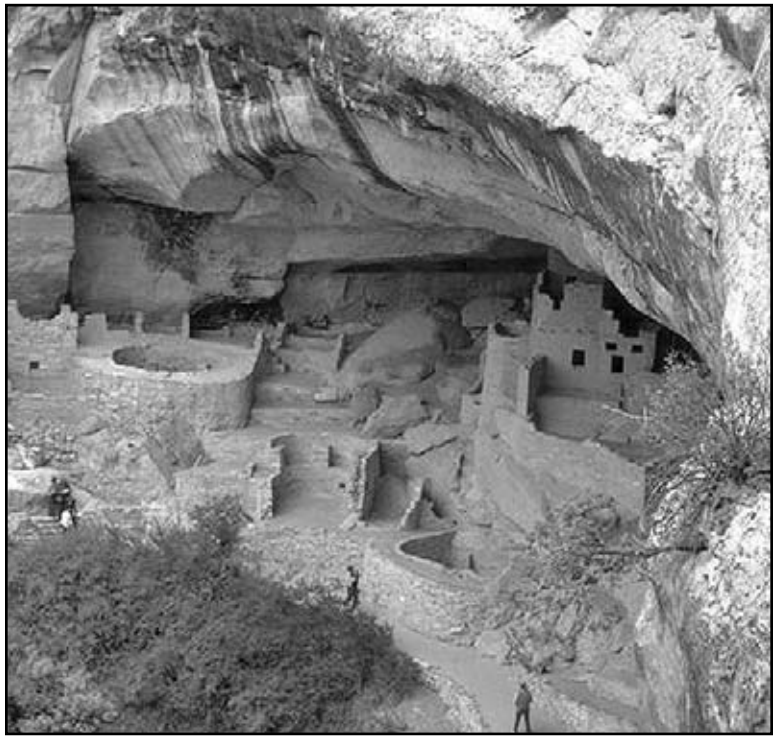
Ancient
Cliff Dwellers



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Front cover: Montezuma Castle was a "high-rise apartment building" for ancient cliff dwellers. It's now a national monument.

Back cover: Newspaper Rock State Historical Monument is a petroglyph that records about 2,000 years of human activity in southeastern Utah.

Note about terms: The ancient cliff dwellers used to be referred to as *Anasazi*, a Navajo word meaning *ancient ones* or *enemy ancestors*. However, the preferred name for the early Four Corners inhabitants is *Ancient Puebloans*, a name chosen by the modern Pueblo peoples.

Mesa Verde is pronounced MAY-suh VAIR-day. *Mesa*, which is Spanish for *table*, also refers to raised, flat-topped land. *Verde* is Spanish for *green*.

Ancient Cliff Dwellers
Level V Leveled Reader
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The Four Corners

Mesa Verde National Park, founded in 1906, is the first national park in the United States established to honor human accomplishments. Located where the states of Utah, Colorado, Arizona, and New Mexico meet, the park contains many cliff dwellings that are among the most striking examples of early human architecture in North America. The builders used great skill, creating these unusual dwellings without the aid of modern tools or machines.

Who lived in these structures, and how did they live? Why did they make their homes in the cliffs? Why did they leave, and where did they go? These are some of the questions we will explore.

Do You Know?

Mesa Verde National Park is located in the Four Corners area, the only place in the United States where the corners of four states meet. The marker indicating the point is a tourist attraction.

Petroglyphs at Mesa Verde

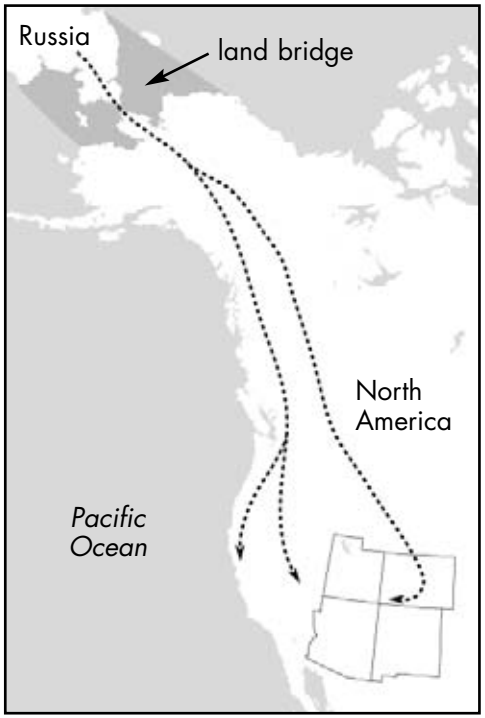
Evidence

The early people who lived in the Four Corners area are called **prehistoric** because they left no written records. We know about them because we've found many remains of their culture buried in the ground.

Mesa Verde is located in a high, flat desert surrounded by mountains. The **arid**, or dry, conditions at Mesa Verde are ideal for preserving skeletons, mummies, dwellings, tools, and trash piles. These remains have helped **archaeologists** to study the lives of the early people who lived in the area. Other remains include **pictographs**, or paintings on stone, and **petroglyphs**, or pictures carved in stone.

Paleo-Indians

To understand the story of the cliff dwellers, we need to go back in time. Scientists believe that at least 14,000 years ago, during the Ice Age, ancient people crossed a land bridge from northern Russia to Alaska in North America. Hundreds of years later, some of their descendants traveled far enough south to reach the Four Corners area.



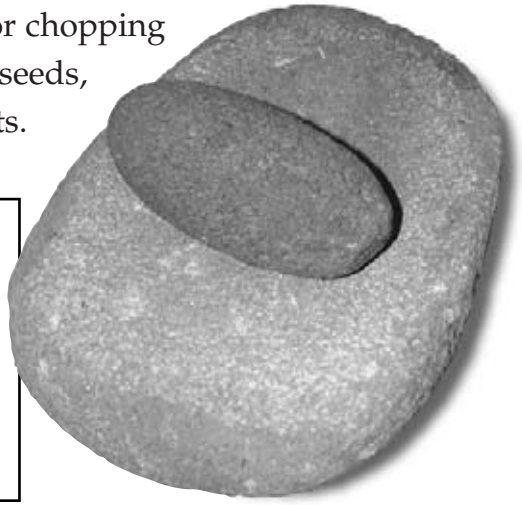
The first Four Corners people were called Paleo-Indians, and they survived by hunting and gathering. Men used large spears to hunt huge herd animals, including elephant-like animals called mammoths and mastodons, and giant bison. Women gathered nuts, berries, and other wild plants. The Paleo-Indians did not have permanent homes. Instead, they moved from place to place following the animals they hunted. They camped in caves or built simple shelters.

Archaic People

When the Ice Age ended about 10,000 years ago, temperatures became warmer, causing the extinction of many large animals and turning large grasslands into deserts. The Four Corners people had to **adapt** to these changes and find new ways to survive. Archaeologists call these people the Archaic people.

Like their Paleo-Indian **ancestors**, the Archaic people were hunters and gatherers. But the animals they hunted were smaller and provided less meat than the ones their ancestors hunted. The Archaic people began to rely more on plants for food.

The Archaic people made different tools from those of the Paleo-Indians—smaller spear points for hunting deer and bighorn sheep, and nets and traps for catching rabbits and birds. Women used special tools for chopping and grinding roots, seeds, nuts, and wild plants.



Early Tools

The first grinding stones and bowls were made during the Archaic people's time. Similar tools are still used by their descendants in the Southwest.

Ancient Puebloans

By about 2,000 years ago, life in the Four Corners had changed in important ways. People had learned to grow their own food instead of relying on wild animals and wild plants. Agriculture changed their way of life. These people were called the Ancient Puebloans.

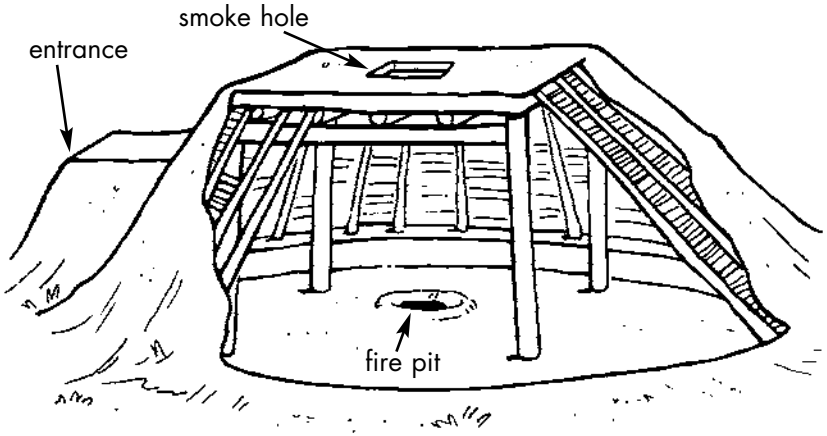
The earliest Ancient Puebloans still relied mostly on hunting and gathering. However, growing their own food, such as corn and squash, on the open flat land allowed them to feed a larger group of people. It also gave them a source of food they could depend on.

Making Baskets

As the Ancient Puebloans grew more food, they found ways to store it. Women began to use plant fibers and tree bark to make baskets. Some baskets held food, while others were woven so tightly that they could hold water. Because baskets could not be placed over a fire, women cooked by placing hot rocks into baskets filled with water. The women also began making sandals from plant fibers.

Sandals made from yucca fibers

As the Ancient Puebloans grew more crops and made more tools and baskets, they moved around less. Even as agriculture became more important to the Ancient Puebloan way of life, men continued to hunt using spears and nets. During this time, they lived in caves along cliffs and canyon walls.

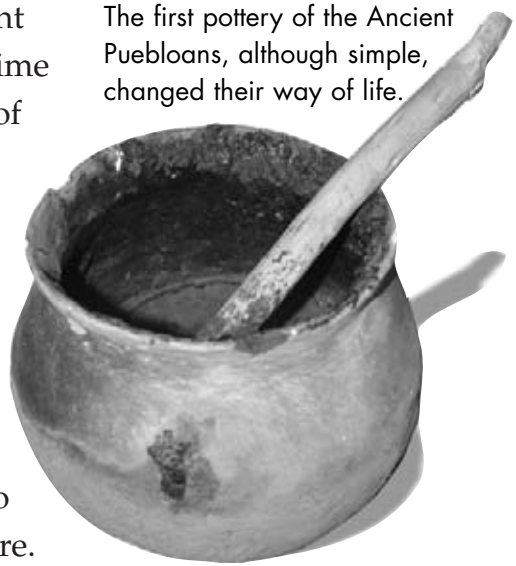


Pit houses could be from 9 to 25 feet (2.74-7.62m) in diameter. The walls were typically made of branches and brush or grass covered in a layer of clay or mud.

Over time, the Ancient Puebloans relied more on agriculture to feed their growing population. By about 1,500 years ago, they grew beans in addition to corn and squash. Having a reliable food source from farming allowed them to stay in one place.

They built temporary houses, called **pit houses**, near their fields. These houses were built on top of shallow pits dug in the ground. The sides and ceilings were constructed of tree branches, bark, and soil. Archaeologists believe the Ancient Puebloans were a peaceful people because no weapons of war have been found. Also, the location of their houses suggests that they did not feel threatened by enemies since houses built in the open are hard to defend.

Another important change during this time was the production of pottery. Tribes from Mexico taught the Ancient Puebloans pottery making. Although women continued to make baskets, using clay pots allowed them to cook over an open fire. Clay pots also stored food better.



The first pottery of the Ancient Puebloans, although simple, changed their way of life.

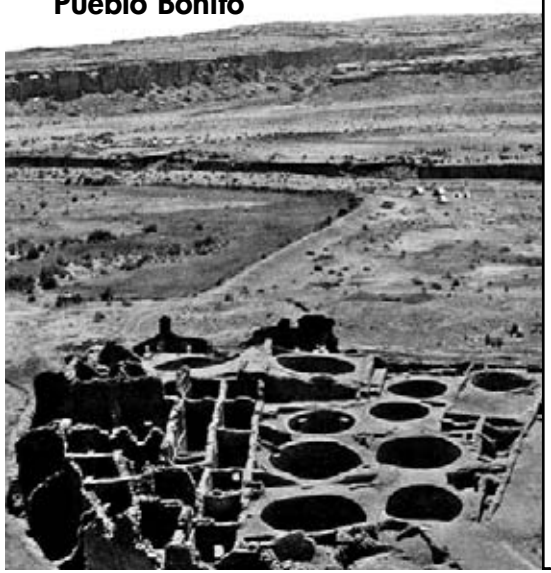
Men started using bows and arrows during this time, which was easier and more successful than spear hunting. These changes allowed the population to continue growing as food became more plentiful.

Quiver filled with arrows

The Ancient Puebloans also used animal hair twisted with cotton string to make warm socks and leg coverings. Sometimes they also wove feathers and string made from yucca plants to make clothing.

Sock made from animal hair and cotton

Pueblo Bonito



Do You Know?

Chaco Canyon, in northwestern New Mexico, was an important cultural center made up of 12 large pueblos. The largest, Pueblo Bonito, housed about 1,000 people. Archaeologists believe that Chaco Canyon was a trade center for surrounding communities.

Building Larger Houses

Around 1,300 years ago, the population had grown so much that the Ancient Puebloans were living in larger groups. They built rectangular houses completely above ground. They used tree limbs and bark for a frame, then covered the wood with **adobe** (soil containing clay). Over time, they started building houses with sandstone blocks stacked and held together with adobe. The houses were built side by side, creating large buildings called **pueblos**. *Pueblo* is a Spanish word that means town or village. The Ancient Puebloans also built underground circular structures called **kivas**, which were used for holding ceremonies.

The Ancient Puebloan culture thrived for several hundred years. The people developed new ways to help their crops grow. They built dams, reservoirs, and terraces to manage water for their fields. Successful crops allowed them to feed their growing population.

The types of pottery they made changed. Women made everyday pottery that was used for cooking and storing food. Everyday pottery was gray with a rough outer texture that helped heat the food inside. They also made pottery that was rubbed and polished to create a smooth surface for decoration or trade. They decorated this pottery with complex, colorful designs using paint made from wild plants.

Corrugation, painted designs, and glossy black interiors show how pottery changed for trade and decoration.

Moving to the Cliffs

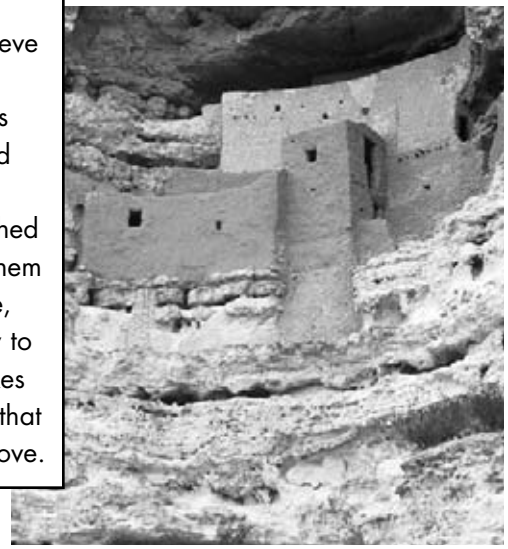
Around 900 years ago, the Ancient Puebloans moved from open land to protected ledges on cliffs and canyon walls. The cliff dwellings found at Mesa Verde and other places in the Four Corners area are typical of this time period. These houses were up to five stories tall, providing housing for hundreds of people. The cliff dwellers used ladders and ropes to get to their homes. They also cut finger and toe holds into the rocks for climbing up the walls.

About 600 cliff dwellings are located in Mesa Verde National Park. Cliff Palace, the largest, had 217 rooms and 23 kivas. The smallest rooms may have been storage rooms rather than living quarters.

Cliff Palace

A Safety Issue?

Some archaeologists believe the Ancient Puebloans were being attacked by other tribes and needed homes they could easily defend. Many cliff dwellings could only be reached with ladders. The people in them could pull their ladders inside, leaving their enemies no way to enter. Although this idea makes sense, there is little evidence that this was the reason for the move.



Montezuma Castle

Archaeologists were puzzled by the Ancient Puebloans' move from open areas to cliff dwellings. They believe that as the Ancient Puebloan population grew, more farmland was needed. Moving to cliff dwellings freed more flat land for growing crops. The Ancient Puebloans also may have needed to create new fields to replace old fields that were overused and had lost the ability to grow food well.

Another possible reason for the move might have been for warmth during winter. The weather was getting colder during this time. Most cliff dwellings face south or southwest, where the sun's rays could warm the rock walls of their homes.

Building Dwellings

Building the cliff dwellings was a huge challenge for the Ancient Puebloans, who lacked machines and used only stone tools. They were skilled at designing structures that made the best use of the space. The builders made walls from large stones chipped into shape and held together with adobe. They covered the walls with adobe, sometimes painting designs on the insides of the walls.

Ruins of adobe walls

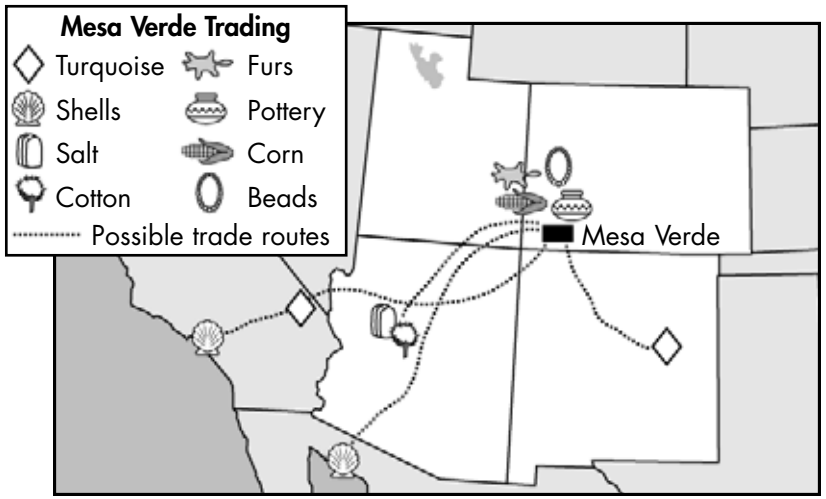
Builders made upper floors by laying large wooden poles across the tops of walls and placing smaller poles across the beams. Next a layer of sticks or bark was piled on. Then they added a thick layer of adobe to hold it together.

This dwelling once had two floors.

Daily Life

The Ancient Puebloans probably spent most of their time outside working together in groups. Women cooked, ground corn, carried water, and made pottery and baskets. Men wove cloth, farmed crops, hunted, and made tools out of stone, wood, and plant fibers. Children worked alongside their parents, learning adult roles by watching and practicing. They also took care of turkeys and spent time at play. During the winter some work was done inside the dwellings. Archaeologists believe that rooms were used year-round for sleeping.

Trade with other tribes was an important aspect of Ancient Puebloan life. The map below shows some of the items they traded and where the items came from.



Inset: inside a kiva Above: the outside of a kiva

Spiritual Life

Because modern kivas are still used by the descendants of the Ancient Puebloans, we know they were used for religious ceremonies. They were probably also used for family gatherings, as guest rooms, and as workspaces in winter.

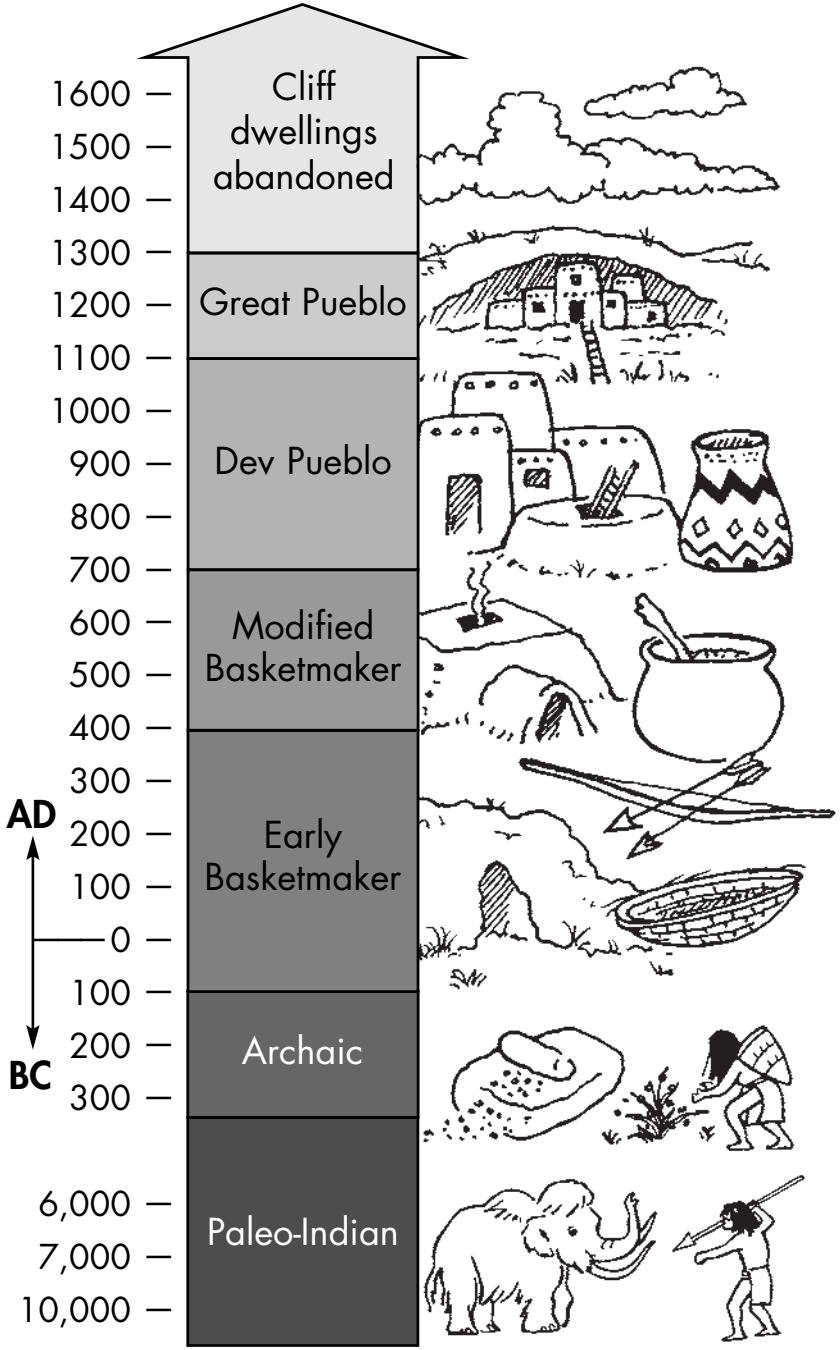
People entered kivas with ladders. Each kiva had a fire pit in the center and a shaft providing fresh air. Half of the Mesa Verde kivas also had a small hole in the floor called a **sipapu**. The hole represented a doorway between the spirit world and the real world. Archaeologists think that the Ancient Puebloans, like their modern descendants, believed that all living things have both a spirit self and a physical self. They also believed in life after death.

Leaving the Cliffs

Between 1280 and 1295, the Ancient Puebloans left the cliff dwellings and moved south to New Mexico and Arizona. No one knows for sure why they moved, but archaeologists believe that the climate kept changing and that this played an important role. It got colder, causing a shorter growing season for crops. Watering crops became harder because there were long periods of time with little or no rain. In addition, the soil may have been so overused that growing enough food for the large population became impossible.

Perhaps by the time the Ancient Puebloans left Mesa Verde, they had cut down most of the trees for firewood and for building pueblos. Hunters may have killed so many wild animals that the meat supply was gone.

Some people think that enemy tribes drove out the cliff dwellers. However, that is unlikely, because there are no remains of other cultures at Mesa Verde after the Ancient Puebloans left. Archaeologists find older remains deeper in the ground and newer remains closer to the surface. If enemies drove out the cliff dwellers, evidence of their culture would be found on top of the Ancient Puebloan remains.



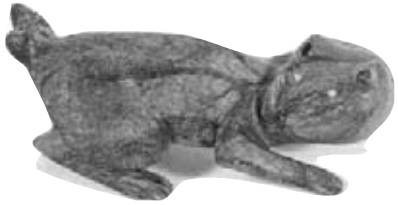
Modern-Day Descendants

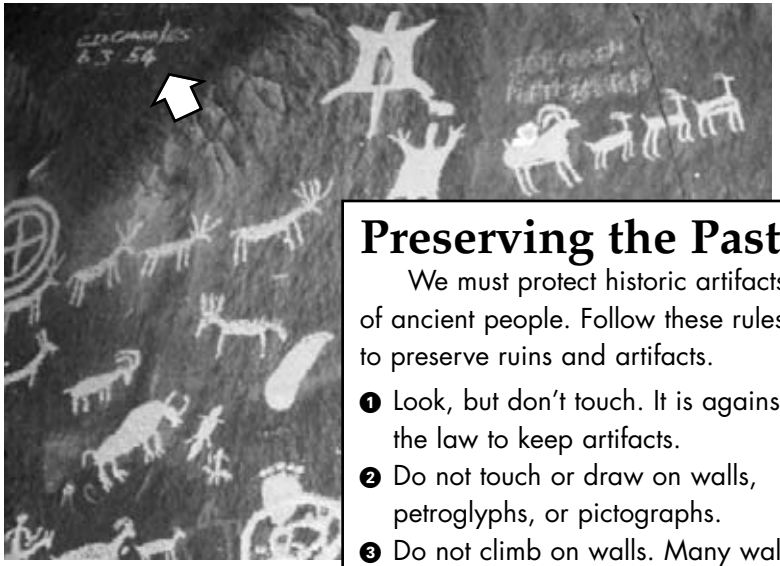
When the ancient cliff dwellers left Mesa Verde, some moved south, settling along the Rio Grande River in New Mexico. These are the ancestors of the modern Pueblo tribes. Others moved to Arizona, eventually forming the Zuni and Hopi tribes.

Maria Poveka Martinez, known for her black on black pottery

Staley Natewa, Zuni Pueblo fetish carver

Modern tribes have continued many of the traditions of the ancient cliff dwellers. The Pueblo, Zuni, and Hopi peoples continue to farm, conduct ceremonies, and perform rituals. They still honor their connection with the land and the spirit world. They are among the finest artists in the world, creating exquisite pottery, jewelry, baskets, carvings, and weavings.





Someone damaged this wall with graffiti.

Preserving the Past

We must protect historic artifacts of ancient people. Follow these rules to preserve ruins and artifacts.

1. Look, but don't touch. It is against the law to keep artifacts.
2. Do not touch or draw on walls, petroglyphs, or pictographs.
3. Do not climb on walls. Many walls are fragile and easily damaged.

Protecting the Cliff Dwellings

In the late 1800s many people visited the cliff dwellings—some photographed, drew, and described the sites, but others took **artifacts** from the dwellings to sell. Over time, people became concerned about protecting the cliff dwellings from damage and looting. The concern led to the creation of Mesa Verde National Park in 1906. The National Park Service protects the cliff dwellings, as well as allowing visitors to enjoy them. Educational exhibits at Mesa Verde and other sites in the Southwest teach people about the Ancient Puebloan way of life.

Glossary

adapt to adjust to new conditions (p. 7)

adobe a dark, heavy soil containing clay (p. 12)

ancestors someone from whom an individual is descended (p. 7)

archaeologists scientists who study past human life and activities as shown by fossils and tools left in the ground (p. 5)

arid dry, lacking moisture (p. 5)

artifacts objects, or remains of objects, made by humans (p. 22)

kiva a circular, underground room used for ceremonies (p. 12)

petroglyphs pictures carved in stone (p. 5)

pictographs paintings on stone (p. 5)

pit house a house built atop a shallow pit, with walls and ceiling made of tree branches, bark, and soil (p. 10)

prehistoric from a time in human history before recorded events (p. 5)

pueblo Spanish for town or village; also, a type of multistoried building occupied by Puebloan peoples, accessed by ladder, with adjoining houses and a flat roof (p. 12)

sipapu a hole in the floor of a kiva that is a doorway between the spirit world and the physical world (p. 18)

Explore More

On the Internet, use *www.google.com* to find out more about topics presented in this book. Use terms from the text, or try searching for glossary or index words.

Some searches to try: *Ancient Puebloan, Mesa Verde,* or *Pueblo pottery*

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Name _____

INSTRUCTIONS: In the first column, write what you already know about the topic. In the second column, write what you would like to learn. After you finish reading, fill in the third column with what you learned from the book.

What I Know	What I Want to Know	What I Learned

ANCIENT CLIFF DWELLERS • LEVEL V • 1

SKILL: ASK AND ANSWER QUESTIONS

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Name _____ Reading a-z

INSTRUCTIONS: Write as many main ideas as you can in the left-hand boxes. Fill in at least two details to support each main idea in the right-hand boxes.

Main Idea	Details
	1. 2.
Main Idea	Details
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Main Idea	Details
	1. 2.
Main Idea	Details
	1. 2.

ANCIENT CLIFF DWELLERS • LEVEL V • 2

SKILL: MAIN IDEAS AND DETAILS

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Name _____

INSTRUCTIONS: Write a word from the glossary in the word box. Below it, write the definition of the word. Write a synonym and antonym on either side of the word, then use the word to write a sentence of your own.

Synonym	Word Box	Antonym

Definition

Sentence

Synonym	Word Box	Antonym

Definition

Sentence

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SKILL: CONTENT VOCABULARY

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Mysterious Caves

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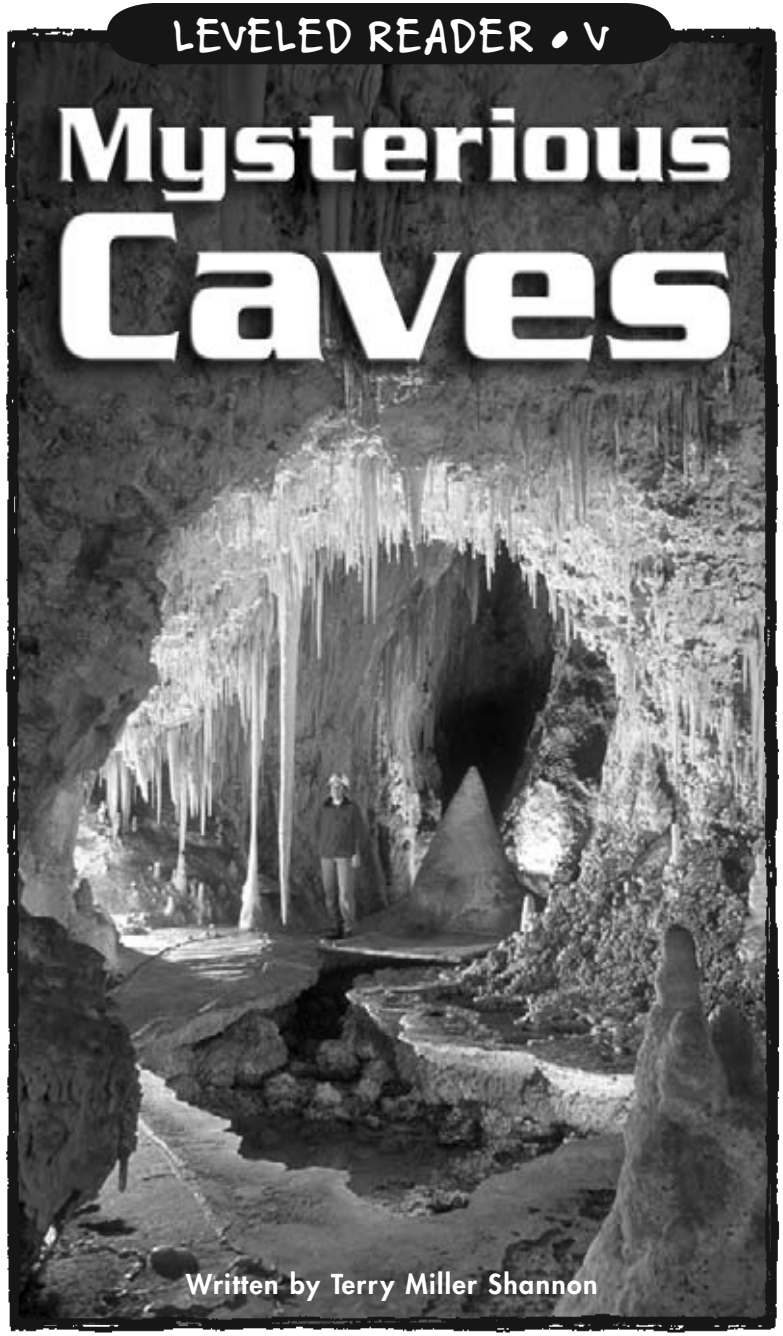

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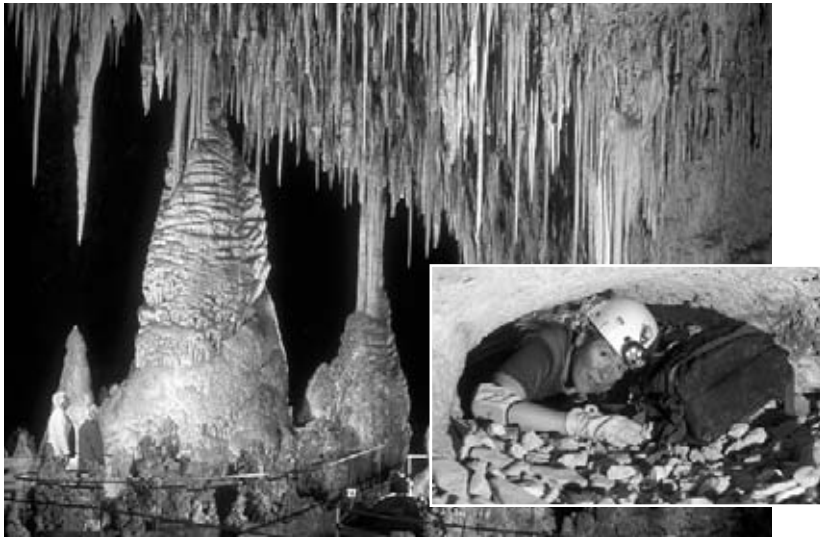


Above: Inside Temple of the Sun in Carlsbad Caverns.
Inset: A caver crawls through a tight space.

What Are Caves?

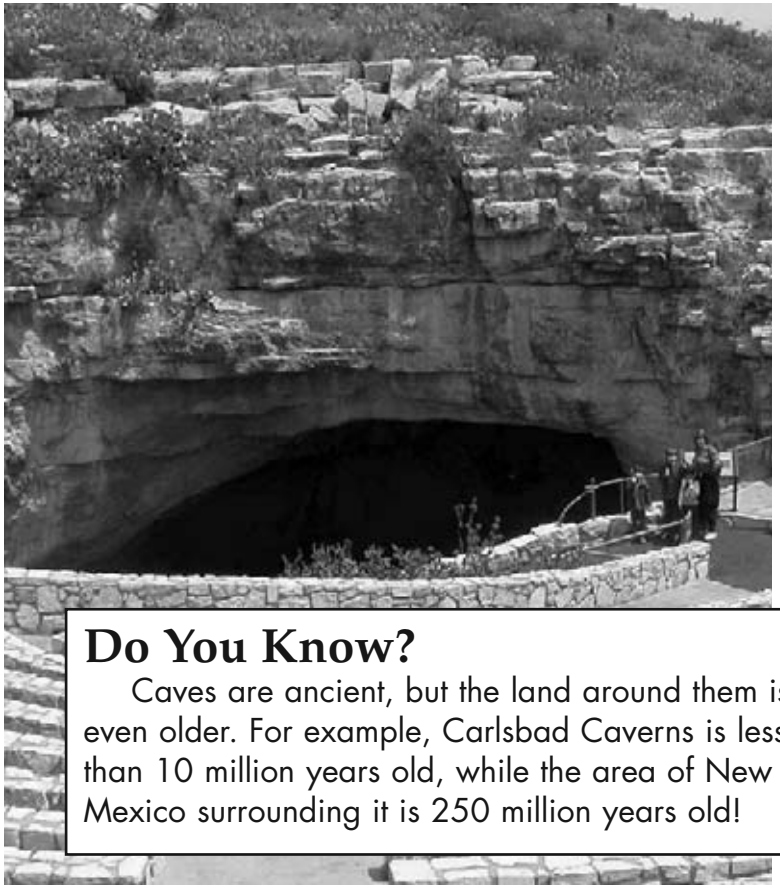
A cave is any natural hollow space. Usually when people talk about caves, or caverns, they mean there's a hole big enough for someone to use as a doorway into the cave. Usually, too, there's an area in the hollow that sunlight never reaches. Most caves are thousands or millions of years old.

Caves are found underwater, underground, and aboveground. A cave can be tiny, or it can be enormous, extending for many miles. Caves are found in every state in the United States, and in many other countries.

People are fascinated with caves. Caves can be magnificently gorgeous, filled with amazing formations and unusual animals. Adventurous people are lured by the challenge and excitement of seeing places no one may have seen before. Some people even live in caves. Explorers have found clues that show people used caves as homes as long as 30,000 years ago.

In this book, you will learn about the different types of caves and how they form, what formations can be found in a cave, what creatures live within caves, and where some famous caves are found.

Cavers climb walls in Carlsbad Caverns.



Do You Know?

Caves are ancient, but the land around them is even older. For example, Carlsbad Caverns is less than 10 million years old, while the area of New Mexico surrounding it is 250 million years old!

Carlsbad Caverns' main entrance

Where and How Caves Form

Caves form in three places: underground, underwater, and aboveground. The way caves form differs according to the type of cave. Nature uses basic tools such as wind and water to shape the earth. All caves form slowly over a very long period of time.

Underground Caves

Long ago, shallow seas once covered parts of the Earth that are now land. Billions of tiny organisms with shells lived in these seas. As the organisms died and sank to the bottom, their shells piled up on the sea floor. Over many years the shells formed layers of rock called limestone. Forces deep below the seas pushed the limestone layers upward, eventually above the seas. Then rainwater seeped into the limestone and mixed with chemicals from decaying plants to form a weak acid. The acid seeped into cracks in the limestone. The acid dissolved, or ate away, the limestone, enlarging the cracks until a hollow was formed—a **limestone cave**. How long does it take for the acid to eat away enough limestone to make a cave? It can take well over a million years.

Inside a limestone cave

Lava tube caves such this one in Hawaii are the largest in the world.

In areas where a volcano has erupted, lava (liquid rock) flows like a stream of hot, thick liquid. The top of the stream cools and hardens to form a roof of rock, while the lava beneath continues to flow. After the eruption is over, the lava below the rock roof drains away leaving a tube-shaped cave underneath. These are called **lava tube caves**. Lava tube caves sometimes form a maze of tunnels with branches heading off in many directions.

Lava tubes can be found around Mt. St. Helens in Washington state.

Underwater Caves

When the Ice Age ended around 40,000 years ago, the sheets of ice covering most of North America and Europe melted causing the water level of the oceans to rise, flooding caves beneath hundreds of feet of water. Some underwater caves didn't start above ground, and have always been filled with water. They formed when the weight of the layers of limestone created cracks that became filled with water. Over time the water slowly wore away more of the rock, forming caves.

Underwater cave

Aboveground Caves

Water and wind move through cracks in rocks aboveground. Ever so slowly, the wind and water, which carry tiny grains of sand, grind away rock and form **erosional caves**. Erosional caves are found in most kinds of rock, but form best in softer rock.

Glacier cave

The most common caves of ice form in mountain glaciers as the glaciers slowly creep down the mountainside. Warmer water on the glacier's surface that has been heated by the sun seeps through cracks in the glacier. The warmer water melts ice deep in the glacier and causes **glacier caves** to form.

Sea caves form wherever ocean waves crash against cliffs. In the United States, sea caves are plentiful in the Pacific Coast states of Washington, Oregon, and California, and also the Na Pali coast of the Hawaiian island of Kauai.

Sea cave

Inside Caves

Since limestone caves are the most common type of caves, we'll take a closer look inside them. Limestone caves are divided into three main parts: entrances, twilight zones, and dark zones.

Entrances may be large or small. They can be a doorway into a mountain, a hole in the ground, or a crack in a boulder. Trees and shrubs hide entrances to some caves.

The twilight zone describes any part of the cave into which some sunlight seeps. If you're inside a cave and can see without a flashlight or a lantern, you're in the twilight zone. This zone is usually cool and damp; and you can find animals and bugs living there.

Twilight zones can be big or small

The third cave area is known as the dark zone. As you might guess from the name, there is no light in the dark zone. No plants grow there, but some animals and mold have adapted to living in the dark. It is very damp and cool. Water drips constantly through the cracks from the ground above.

Cave explorers find amazing and beautiful formations inside caves. These formations hang from the ceiling, rise from the floor, and decorate the walls. They are formed when water drips through the cracks of the rocks above the cave.

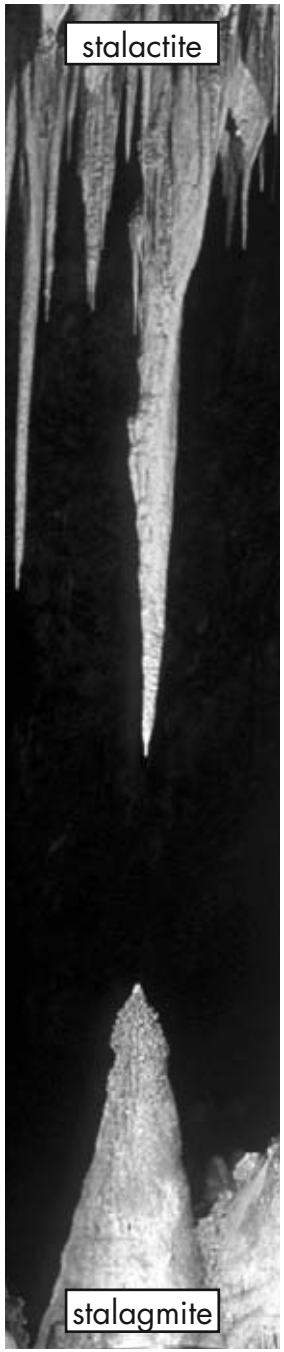
Many people are familiar with **stalactites** and **stalagmites**. These form when limestone dissolves in water that drips from the cave ceiling to the floor. As the water evaporates, the dissolved limestone builds up, bit by bit, creating stalactites on the ceiling and stalagmites on the floor.

A stalactite, which looks something like a rock icicle, grows only about 2 millimeters (about 0.08 inches) a year. Stalagmites, which look like upside down icicles, grow at the same speed as stalactites and are often more than 15 meters (50 feet) high and 10 meters (33 feet) wide at their base. They can have rounded, flat, or bowl-shaped tops. Sometimes a stalactite and a stalagmite will join to form a **column**.

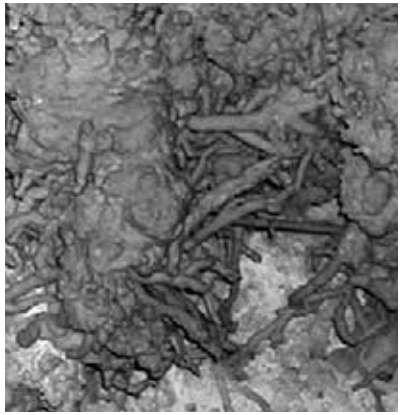
Helpful Hint

If you think of the *c* as standing for *ceiling*, it will help you remember that stalactites hang from the top of the cave. If you think of the *g* as standing for *ground*, it will help you remember that stalagmites point up from the floor of the cave.

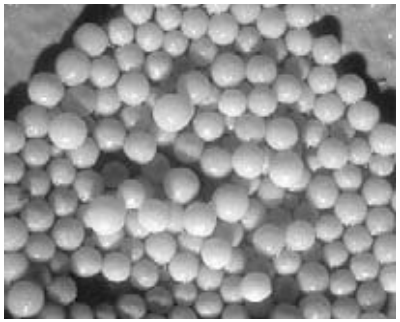
Other cave formations are created when water evaporates and leaves behind minerals. When water drops slide down the walls, each leaves a bit of limestone behind as the water evaporates. This limestone forms thin sheets that hang from cave ceilings. These are called **draperies** and can become more than 3 meters (10 feet) long. Some draperies are so thin they let light pass through. Draperies are sometimes different colors because minerals from the ground above may add color to water seeping into the cave below.



Soda straws



Helictites



Cave pearls

A **soda straw** is another type of formation found in limestone caves. Like the straw you use to drink a soda, these structures are long and hollow.

A twisty, twirly type of cave formation is called a **helictite**.

A rare formation is called a **cave pearl**. A pearl may start as a grain of sand that is covered, layer by layer with limestone as the water that contains the mineral dries around the grain of sand. They can be less than an inch in size or more than several inches in diameter.

It takes a very long time to build a formation, drop by drop—many thousands of years.

Natural caves and cliffs in New Mexico became homes to Ancient Puebloans.

Cave Inhabitants

Creatures, small and large, have made their homes in caves for millions of years. At one time, humans found the enclosed space of a cave was a good place to live. Today, some people still call caves home. In Andalucia, Spain, hundreds of people live in caves, while in northern China there are millions of human cave dwellers. Other countries where people live in caves include Turkey, North Africa, and France.

Many scientists divide the animals living inside caves into three groups: the ones who never leave the cave, the ones who live part-time in the cave, and animals who visit caves. The thousands of types of animals who never leave caves can't survive outside them. These animals have adapted to survive in the dark. They include some kinds of millipedes, cave spiders, crickets, beetles, spiders, centipedes, crawfish, salamanders, and fish. They may be blind and may not have eyes. They are often colorless.

Blind crawfish have no need for sight inside dark caves.

Animals that live both inside and outside caves can survive in either place. Examples of these include some beetles, land crayfish, millipedes, centipedes, and some salamanders.

Other animals visit caves for shelter, to rest, or to hunt for food, but spend most of their time outside the cave. This group includes bats, bears, foxes, pack rats, snakes, raccoons, moths, groundhogs, vultures, and crickets.

Exploring Caves

People who explore caves are called **spelunkers**. Why do spelunkers go into caves? Some do it for adventure and the physical challenge of climbing down ropes, crawling through tiny tunnels, and exploring deeper regions of the Earth. Other spelunkers like discovering places possibly seen by no one else on Earth. Scientists enter caves to learn more about the Earth.

Do You Know?

In 1940, four boys accidentally discovered one of the most famous art caves, France's Lascaux Cave. They squeezed into a small hole, entering a large cavern with beautiful paintings of deer and bulls. Luckily, the boys were not hurt, but entering a cave without an experienced cave explorer or guide is a dangerous idea. Later, one of the boys became the cave's main guide.

A cave is exciting and exotic, and it can definitely be dangerous. So if you plan to visit a cave, take a guided tour to avoid getting hurt. The guide can explain the many wonders to be found inside a cave, and safely get you in and out. They can keep you from damaging the cave.

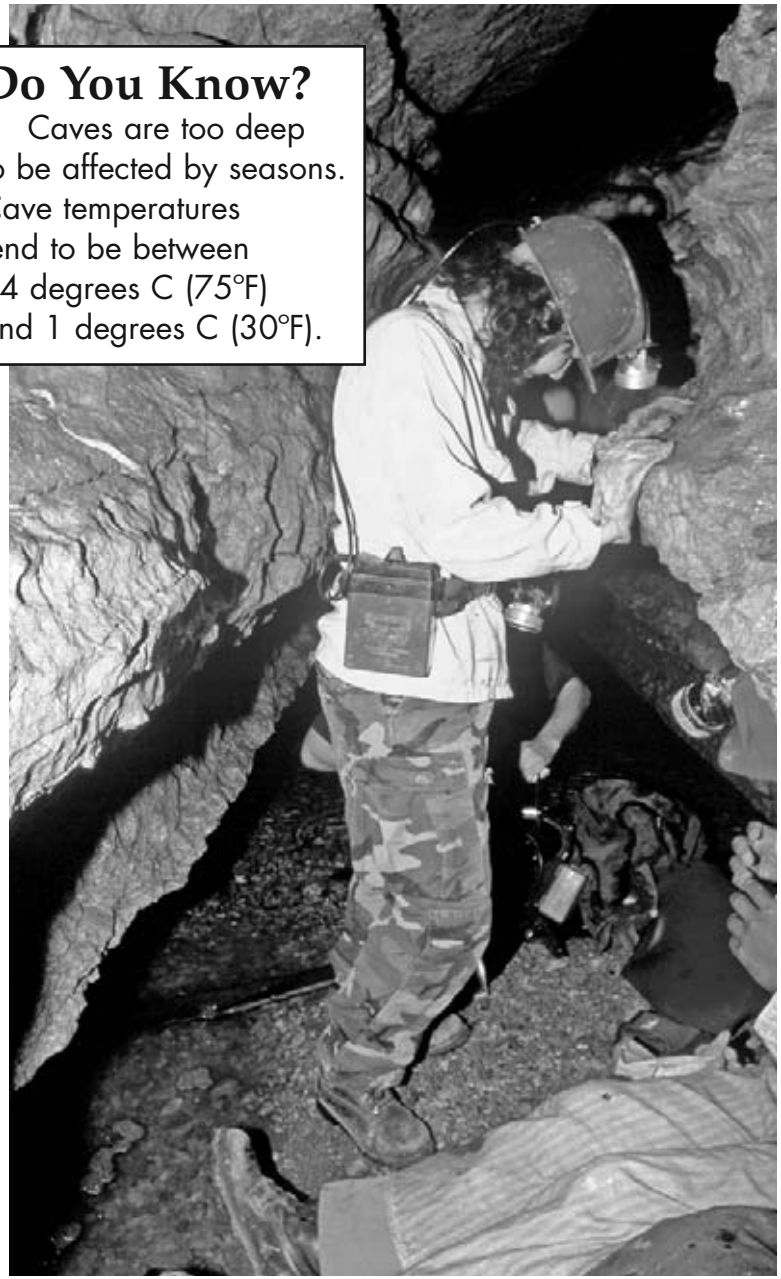
A cave has taken millions of years to form and is full of delicate formations. A visitor can damage it without thinking. Thoughtless cave guests have broken off stalactite tips as souvenirs, destroying in a second something that may have taken 40,000 years to form.

People have also thrown coins in underground pools, polluting them, or left trash in caves. Caves lie so close to natural water reservoirs that when we pollute caves, we can also pollute drinking water. When you visit a cave, you should leave a cave exactly as you found it.

Experienced cave explorers equip themselves with helmets, flashlights, warm clothing, and knee pads. They may descend into the cave on a rope. As the spelunkers go deeper, their eyes must adjust to the darkness. They may have to wriggle through a tiny tunnel. In the cave, they hear water drip-drip-dripping, but no other sound. The only light is the glow of their flashlights.

Do You Know?

Caves are too deep to be affected by seasons. Cave temperatures tend to be between 24 degrees C (75°F) and 1 degrees C (30°F).

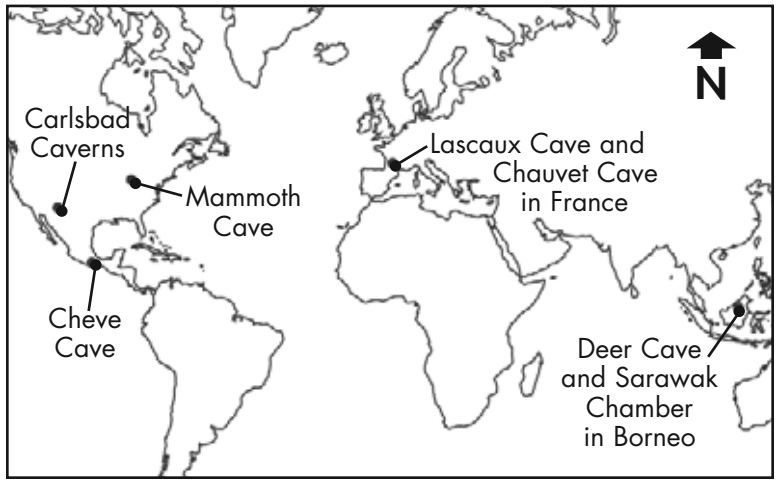


Helmet, light, backup light, gloves, and boots are necessary equipment for cavers.

Famous Caves

There are caves throughout the world known for one or more outstanding features. One of the most renowned caves is the Chauvet Cave in France. It was discovered in 1994, and contains more than 300 of the world's oldest paintings—approximately 30,000 years old. The paintings include horses, lions, bears, and rhinoceroses.

Mexico's Cheve Cave is famous for being one of the deepest cave systems in the world. The deepest tunnels may be more than 2,000 meters (6,500 feet) below the surface. The world's largest known natural cave chamber is Sarawak Chamber in Asia's Sarawak, Borneo. The world's largest known cave passage, Deer Cave, is also located in the network of caves in Sarawak, Borneo.



Carlsbad Caverns' Big Room

The United States claims some famous caves, too. Mammoth Cave in Kentucky contains more than 300 miles (482.08 km) of known passageways, making it the largest known cave system in the world. Carlsbad Caverns in New Mexico is a national monument with more than 80 known caves in the system. Carlsbad's magnificent Big Room is the seventh largest known cave in the world. It measures 1,800 feet (548.64 meters) long, as much as 1,100 feet (335.28 m) wide, and 255 feet (77.72 m) deep.

Carlsbad Caverns' Witches Finger, a stalagmite

Conclusion

The world of caves is fascinating. Where else on Earth can you find unexplored land, discover otherworldly formations, and see artwork from thousands and thousands of years ago? As long as we treat them respectfully, we can continue to experience the wonder of caves indefinitely.

Glossary

cave pearl *(n.)* cave formation formed when layers of limestone build up around a grain of sand (p. 14)

column *(n.)* cave formation formed when the gap between a stalactite and stalagmite closes (p. 12)

draperies *(n.)* cave formations shaped into thin sheets and hanging from cave ceilings (p. 13)

erosional caves *(n.)* caves formed by wind and water, slowly wearing away rock (p. 9)

glacier caves *(n.)* caves formed mostly in glaciers (p. 10)

helictite *(n.)* cave formation that is twisted, spiraling, or curly (p. 14)

lava tube caves *(n.)* caves formed from a lava river when the surface cools and hardens, leaving a tube beneath when the lava flow stops (p. 8)

limestone cave *(n.)* caves formed as water eats through rock, leaving hollows (p. 7)

sea caves *(n.)* caves formed by ocean waves wearing away rocks (p. 10)

soda straw *(n.)* a long, hollow tube that forms in limestone caves (p. 14)

spelunkers *(n.)* people who explore caves (p. 17)

stalactite *(n.)* cave formation hanging from the ceiling like a rock icicle (p. 13)

stalagmite *(n.)* cave formation on a cave floor, similar to an upside down rock icicle (p. 13)

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Name _____

INSTRUCTIONS: Reread pages 7-10. Complete the worksheet using the information found on these pages. There may be more or less than five details for each main idea. Write a summary of this section of the book on the back of this worksheet.

Main Idea	Details
	_____ _____ _____ _____ _____
Main Idea	**Details**
	_____ _____ _____ _____ _____
Main Idea	**Details**
	_____ _____ _____ _____ _____

MYSTERIOUS CAVES • LEVEL V • 1

SKILL: MAIN IDEA AND DETAILS

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Name _____ Reading a-z

INSTRUCTIONS: Circle the prepositions and underline the prepositional phrases.

about	beside	inside	through	according to
above	besides	into	throughout	because of
across	between	like	till	by way of
after	beyond	near	to	in addition to
against	by	of	toward	in front of
around	down	off	under	in place of
at	during	on	until	in regard to
before	except	out	up	in spite of
behind	for	outside	upon	instead of
below	from	over	with	on account of
beneath	in	since	without	out of

MYSTERIOUS CAVES • LEVEL V • 2

1. Perry's cave is located fifty-two feet below the surface of South Bass Island in Lake Erie.

2. An underground lake that rises and falls with Lake Erie is located in the cave and indicates subterranean connections.

3. The Victory Hotel, in addition to being the largest and most luxurious hotel in the world, used the water from the cave's lake until it burned in 1919.

4. Besides the underground lake, visitors will see stalactites, stalagmites, and cave pearls.

5. When visiting the cave, tourists are asked to wear a light jacket and comfortable walking shoes with rubber soles.

SKILL: PREPOSITIONAL PHRASES

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Name _____ Reading a-z

INSTRUCTIONS: Look up each vocabulary word in a dictionary. Fill in the information below as indicated.

Entry word	Guide words	Syllables and accent mark	Part of speech	Definition as used in the text
acid				
magnificently				
cavern				
transparent				
lure				
seeping				
formation				
organism				
fascinate				
renowned				

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The Sun

A Reading A–Z Level V Leveled Reader
Word Count: 1,631

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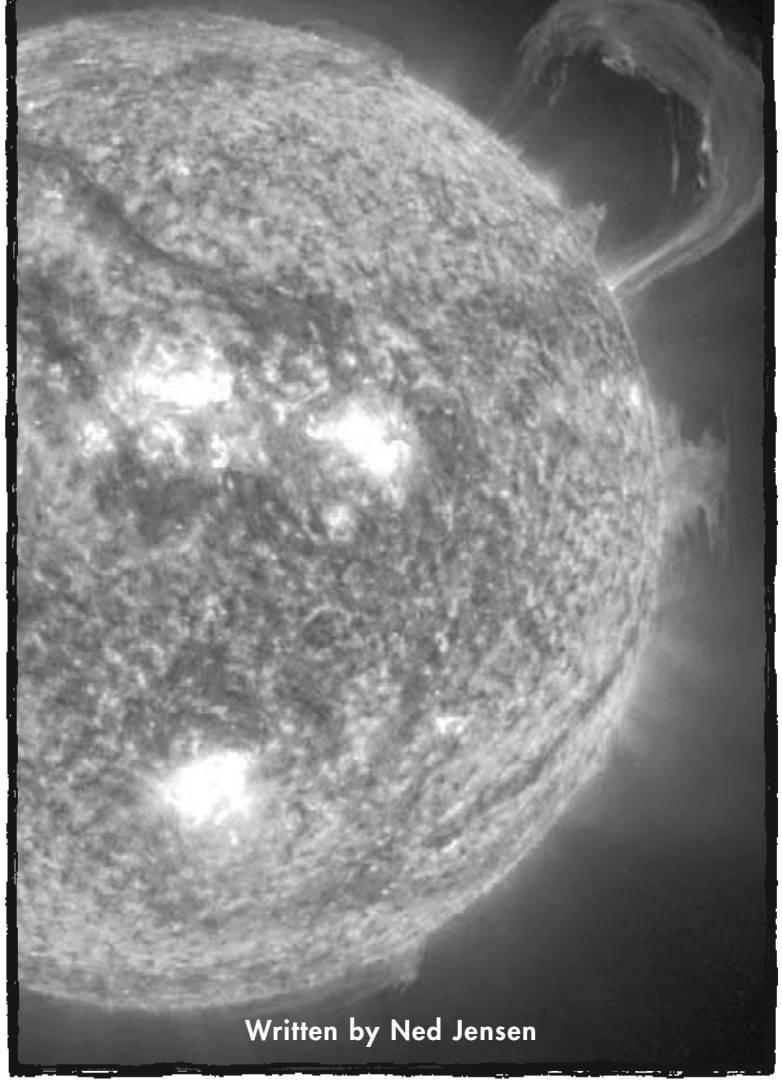
The Sun



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Correlation

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Solar eclipse

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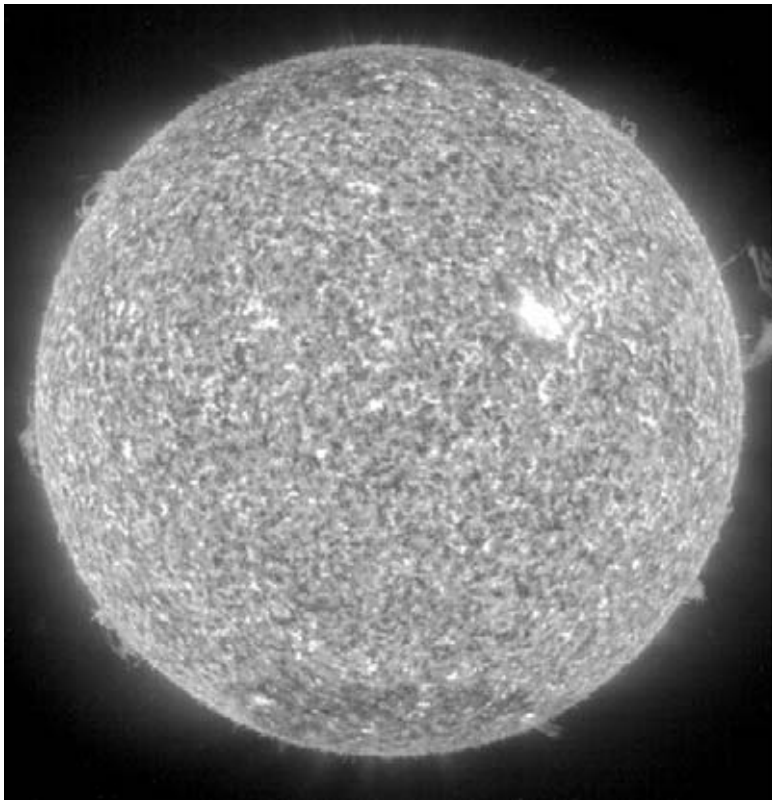
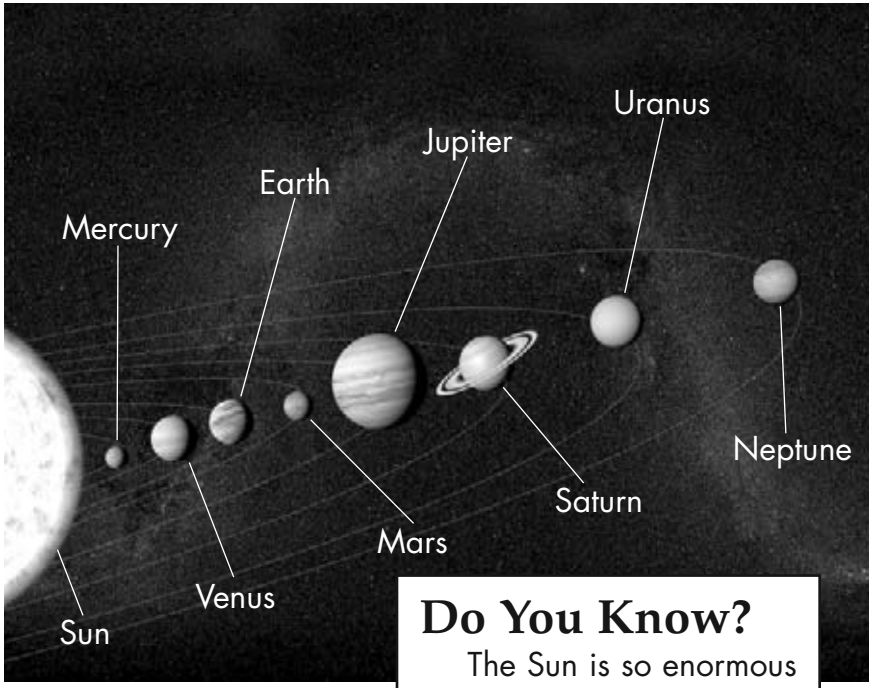
Introduction

The Sun is a huge ball of flaming gas at the center of our solar system. It's just one of billions of stars in the galaxy, but life on Earth couldn't survive without it. The Sun controls Earth's heat, light, and weather. Scientists know a lot about the Sun and how it affects Earth's inhabitants. Scientists are always learning more and finding new ways to harness the power of the Sun.



The Sun is a raging storm of activity.

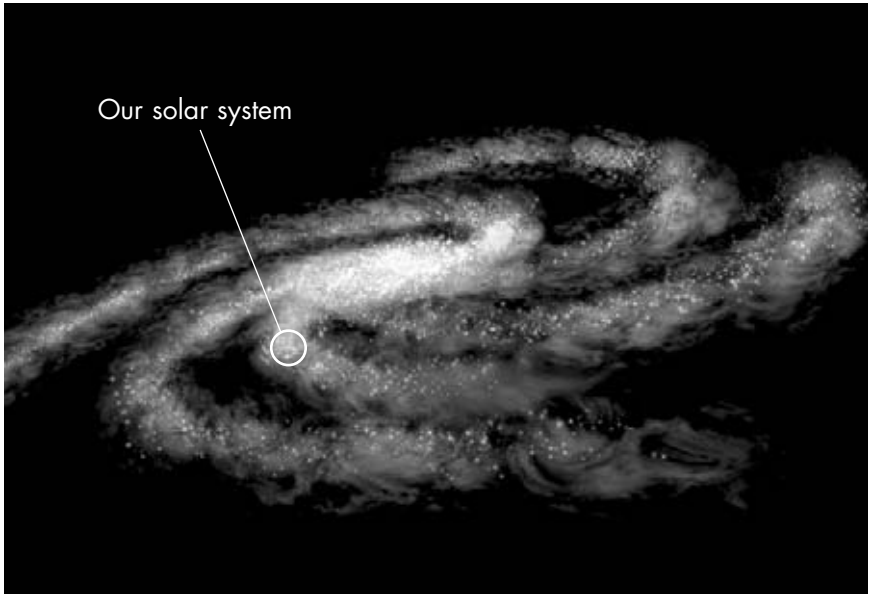


Planets in orbit around the Sun

Do You Know?

The Sun is so enormous that 1.3 million Earths could fit inside it.

The Sun's far-reaching gravity prevents Earth and its seven sister planets from flying off their elliptical **orbits** into the vast universe. Earth makes one complete orbit around the Sun every 365 days, or once every year. If Earth's orbit slowed down, it would become a doomed fireball and crash into the Sun. If Earth's orbit speeded up, it would break free of the Sun's gravity and become a block of ice floating through space. Without the Sun, Earth would be a dark, frozen wasteland void of life.



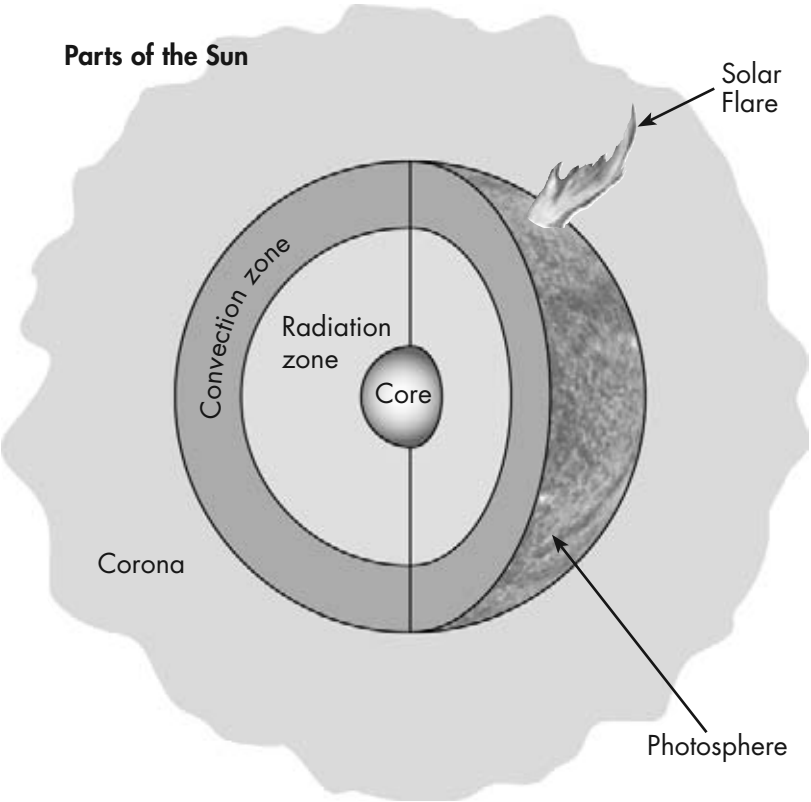
Our Sun and solar system are just a tiny part of the Milky Way.

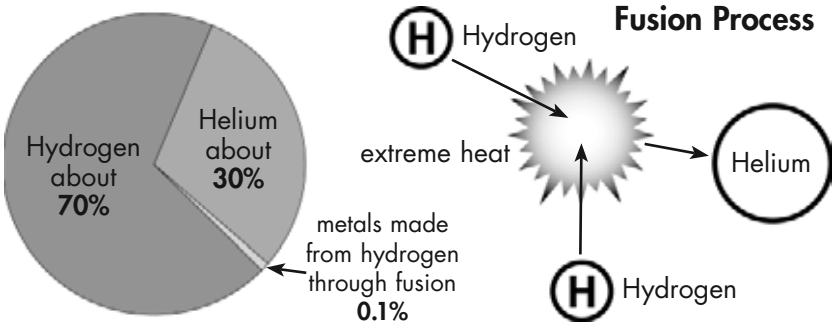
Just Another Star

The Sun is just one of billions of stars in the Milky Way galaxy. The Milky Way is made up of a huge collection of stars. Compared to billions of other stars, the Sun is small. Some astronomers call it the yellow runt. All stars, including the Sun, are classified by color, size, and brightness. The biggest stars are the red giants, which can be 400 to 500 times the size of Earth's Sun. The smallest stars are the very hot white dwarf stars. In between these giant and dwarf stars are the yellow stars, such as our Sun. They are the most common type of stars found in the Milky Way.

Where the Sun Gets Its Energy

Earth's Sun started producing energy shortly after it began forming—estimated to be about 4.5 billion years ago. The Sun started as a gigantic cloud of gas and dust. It began collapsing into a huge ball under the force of gravity. As more and more dust and gas were packed into the giant ball, the pressure around the hydrogen gas at the center increased. This pressure produced extremely high temperatures that triggered a reaction at the center, or core, of the ball.





The fuel in the Sun has kept this reaction going since it started. The energy-producing reaction in the core is called a **thermonuclear reaction**.

A combustible gas called hydrogen makes up about 70 percent of Earth's Sun. Most of the remaining gas is helium. Hydrogen gas is the fuel that produces the Sun's energy. In a thermonuclear reaction, tiny hydrogen atoms combine to form larger helium atoms. This process is called **fusion**. When the hydrogen atoms fuse they release bits of energy. As trillions upon trillions of hydrogen atoms fuse and release energy, the overall effect is the release of huge amounts of energy.

Do You Know?

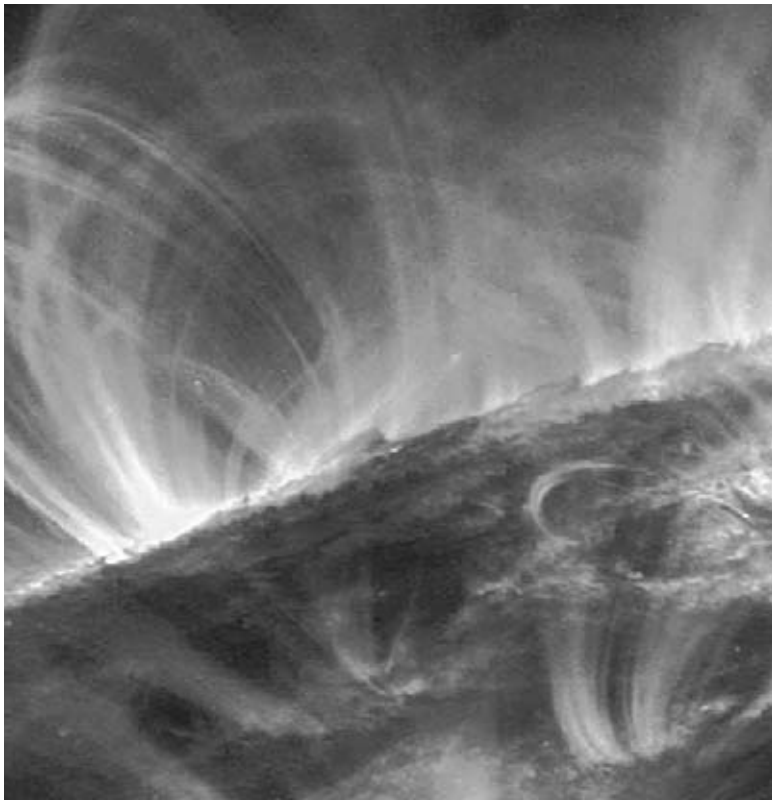
The Sun is so hot that its surface temperature can reach 6,000°C (11,000°F). Compare that to the temperature of boiling water, which is 100°C (212°F), and you get an idea of just how hot the Sun is. It's 60 times hotter!

The energy slowly makes its way from deep in the Sun's core to its surface. It takes hundreds of thousands of years for particles of energy to travel the half-a-million miles from the core to the surface. Along the way the particles lose much of their energy, and the remaining energy that reaches the Sun's surface is in the form of visible light energy, which is the light we see from Earth.

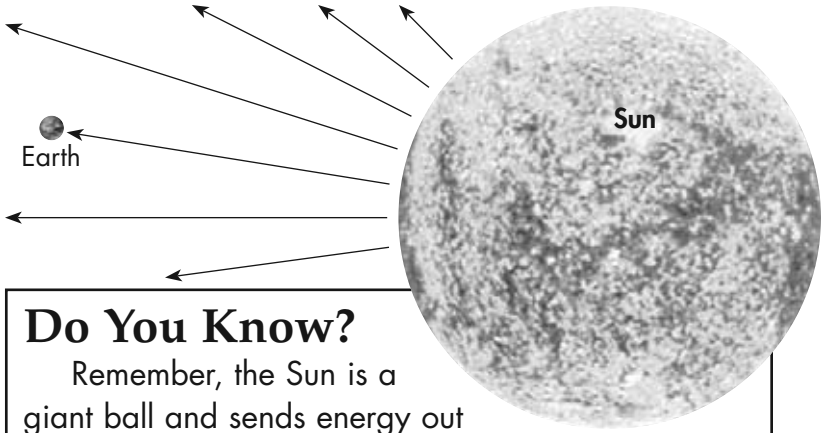
Solar telescopes like this one on Kitt Peak in Arizona allow scientists to take a closer look at the Sun.

Action on the Surface

From Earth the Sun may look like a gentle, glowing ball, but scientists know that the surface is actually raging with activity. Energy is constantly bubbling to the surface, much like a pot of boiling soup. While the Sun's surface is always a storm of activity, there are times when it is more active than others. In fact, the Sun's activity seems to occur in eleven-year cycles.



Action seen on the Sun's surface, or photosphere, and in the corona



Do You Know?

Remember, the Sun is a giant ball and sends energy out in all directions. Only a tiny fraction of the Sun's energy reaches Earth. Most of it goes off into space.

During active times, scientists observe dark spots moving across the Sun's surface. These areas, called **sunspots**, are cooler than the surrounding gases. They occur where magnetic energy bursts to the surface.

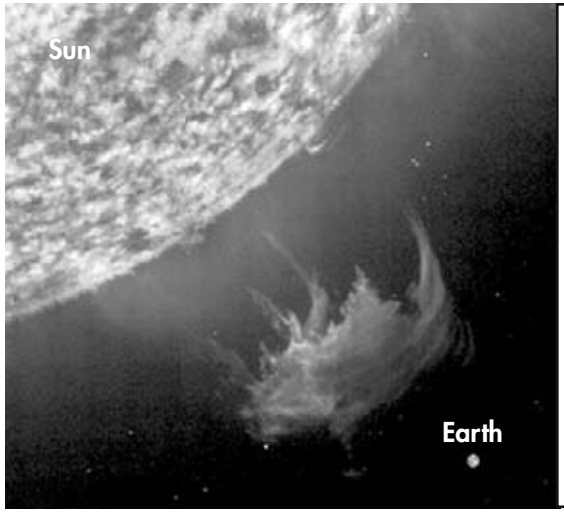
Other solar activities take place during the high points in the Sun's cycle. The most violent are **solar flares**, which are large loops of energy shooting high above the Sun's surface. Some of these flares reach heights of more than 100,000 miles. One of the largest solar flares recorded erupted in 1946 and arched 140,000 miles high.

Solar flare

While solar flares are shooting from the surface, the Sun's corona, or the halo of light around the Sun, becomes very active. Strangely, even though the corona is far above the surface of the Sun, it is much hotter than the surface. The corona reaches temperatures over 2 million degrees Celsius. When the corona is active it ejects huge masses of **radiation**.

This increased activity of the corona sends waves of high-energy particles sweeping toward Earth. The radiation threatens to disable satellites orbiting Earth that control radio, television, and cell phone communication, as well as electrical power. In 1989 a massive solar explosion knocked out a power grid on Earth, leaving almost 7 million people in the United States and Canada without electricity.

Massive blackouts can be caused by solar explosions.



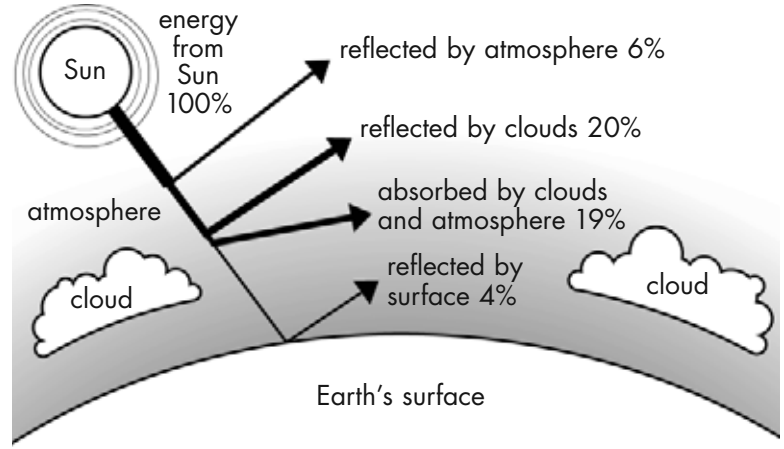
Do You Know?

The Sun is 150 million kilometers (93 million miles) from Earth. That is the same distance as traveling around Earth at the equator more than 3,700 times.

From Sun to Earth

Most people think that heat from the Sun warms the Earth. But heat has to travel through **matter** to get from one place to another. So while the Sun's energy travels through the vacuum of space, that energy doesn't heat space.

Energy from the Sun travels to Earth as electromagnetic waves called **radiant energy**, which only turn into heat when they are absorbed by matter. Examples of radiant energy include visible light, infrared light, and **ultraviolet waves**. About half of the radiant energy we get from the Sun is in the form of visible light. The rest is in the form of infrared and ultraviolet light, which humans cannot see.



About 51 percent of the radiant energy from the Sun is absorbed by Earth's surface.

Radiant energy travels fast—300,000 km per second (186,000 miles per second). At that speed you could go around Earth about eight times in one second. That's really flying! But even going that fast it takes energy leaving the Sun eight minutes to make the trip to Earth.

Earth's atmosphere and clouds reflect much of the radiant energy from the Sun before it reaches the surface. When radiant energy gets through, the atmosphere absorbs some of it, heating the air. The energy also hits the surface of the Earth and is absorbed by the land, water, and other matter. When the radiant energy is absorbed, it changes to heat as the visible light or infrared waves agitate the molecules in the matter struck by the waves.

Try This

Which Cup Is Warmer?

Earth's surface heats unequally. Land absorbs the Sun's radiant energy better than water. Dark surfaces absorb energy while light-colored surfaces reflect energy.

Materials:

- flat black paint
- two 16 oz. tin cans (remove labels)
- thermometer
- small paintbrush
- water

Steps:

1. Paint the outside of one can with black paint.
2. After allowing the paint to dry, fill the black can about halfway with water.
3. Fill the unpainted can with an equal amount of water.
4. Place both cans of water in the sunlight for two hours.
5. After two hours, use a thermometer to tell which cup of water is the warmest.

The Sun and Us

Just about all of the energy we use as humans can be linked to the Sun. The energy we get from food comes from plants that use sunlight to grow. So when you eat an apple or a plate of spinach, you're eating the Sun's energy.

The coal, gasoline, and oil we burn for energy comes from the Sun, too. All of these sources of fuel are from plants that grew long, long ago by using energy from the Sun.

Even the energy we get from the wind comes from the Sun. Uneven heating of the Earth's surface by the Sun is what makes the air surrounding Earth move. In essence, the Sun moves sailboats and spins the blades of wind generators.

Windmills turn using wind created by the uneven heating of Earth's surface.

Solar cells collect energy from the Sun.

Scientists have found ways to capture the Sun's energy and use it to heat homes and make electricity.

Solar cells absorb energy from the Sun and change it into electricity. Solar cells are used on calculators. They are also placed on large panels attached to satellites in space. Cities and homes use solar energy for heat in colder months.

Do You Know?

In Germany there is a solar energy power plant that can make enough electricity to power almost 2,000 homes. An area bigger than 37 football fields is covered with 33,500 large solar panels. This power plant uses only solar energy, and it does not pollute the air or water.

Solar collectors are used to produce heat. They are made of black pipes filled with water. The black pipes absorb radiant energy from the Sun. The radiant energy changes to heat and warms the water in the pipes. The water then flows through pipes into a building. Heat radiates out from the water in the pipes and heats the air in the building.

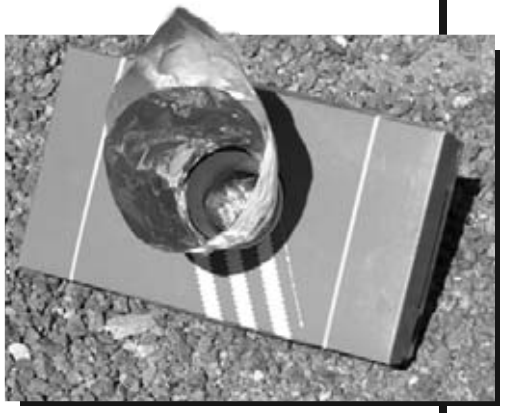
Solar furnaces are used to produce very hot temperatures. They are made of curved mirrors that focus energy from the Sun into a very small area. The concentrated energy is changed to heat and can reach temperatures of thousands of degrees. The very hot temperatures are used to make new materials and to destroy harmful waste products. Scientists are even planning a solar furnace that will float in space and send focused solar energy back to Earth.

1000 kw solar furnace in Odeillo, France

Try This

Solar Cooker

Make your own solar cooker at home!



Materials:

black construction paper
scissors
white foam cup
2 rubber bands
shoebox
sealable plastic baggie
2–3 slices of apple
aluminum foil
newspaper/styrofoam

Steps:

1. Cut a strip of black construction paper to fit the inside of the foam cup.
2. Place the apple slices inside the baggie and seal it.
3. Cut a hole in the lid of the shoebox that is big enough to fit the cup through.
4. Place the cup in the box and surround it with shredded pieces of newspaper or pieces of styrofoam. Use the rubber bands to secure the shoebox lid.
5. Use the foil to make a funnel around the cup as shown in the picture. Keep the foil smooth making sure the shiny side faces inward.
6. Line the foam cup with the construction paper and place the baggie with apples inside.
7. Aim the foil funnel toward the sun and wait 1–2 hours. Remove the cup and eat your baked apple.

Question: What caused your solar cooker to get hot?

This house takes advantage of solar energy with windows facing south.

Passive solar homes have special features to collect energy from the Sun. These homes have large windows that face the south in the parts of the world north of the equator. They face north in areas south of the equator. During the colder winter months when the Sun is lower in the sky, sunlight passes through the windows and changes to heat when it is absorbed by walls inside the house.

As important as the Sun is to our survival, it also poses dangers to humans. We are learning more and more about how solar energy damages our skin. A skin cancer, called melanoma, is caused by overexposure to the Sun's harmful ultraviolet rays. Years of exposure and severe sunburns can damage skin cells. It is important to wear sunscreen and clothing that covers your skin when you are out in the Sun, especially for long periods of time.

Do You Know?

Never look directly into the Sun. The Sun's powerful rays can burn the cornea, the sensitive area of your eyes that makes it possible for you to see. Damage to the cornea can cause blindness.

Even sunglasses can't completely protect your eyes from the Sun.

The Sun's Death

Each day fusion changes more and more of the Sun's hydrogen fuel into helium. Scientists estimate that the Sun has about 5 billion years of fuel left before it will begin to cool down and eventually die.

Ring Nebula—what Earth's Sun could look like when it dies

Conclusion

We depend on the Sun for our survival. It is the source of most of the energy we use every day. Scientists are working hard to better understand the Sun and its energy. Satellites orbiting Earth collect data from the Sun. Better solar telescopes being developed on Earth are aimed at the Sun to collect data. As we understand the Sun better and find new ways to use its energy, we will grow even more dependent on the power of the Sun.

Glossary

fusion	blending of atoms that results in the release of energy (p. 8)
matter	a substance that takes up space and has weight (p. 13)
orbits	path taken by a body, such as the Earth, around another body, such as the Sun (p. 5)
radiant energy	energy traveling in electromagnetic waves, such as infrared, visible light, or radio waves (p. 13)
radiation	process of giving off energy in the form of rays of light or heat (p. 12)
solar cells	structures made from silicon or plastic that absorb light energy from the Sun and turn it into electricity (p. 17)
solar flares	sudden energy bursts that appear as large bright loops on the Sun's surface (p. 11)
sunspots	cooler, dark spots on the Sun's surface that eject magnetic energy (p. 11)
thermonuclear reaction	energy released as a result of hydrogen atoms combining to form helium atoms (p. 8)
ultraviolet waves	radiant energy waves similar to light, but which cannot be seen by humans; can cause skin damage (p. 13)

Explore More

On the Internet use *www.google.com* to find out more about topics presented in this book. Use terms from the text, or try searching for glossary or index words.

Some searches to try: *solar energy*, *sunspots*, or *thermonuclear reaction*.

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Name _____

INSTRUCTIONS: Identify at least three cause-and-effect relationships from *The Sun* and list them below.

Cause	Effect

THE SUN • LEVEL V • 1

SKILL: CAUSE AND EFFECT

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Name _____

Reading a-z

INSTRUCTIONS: Write the words to show how you would read these numbers and symbols aloud.

Example:

6.25 *six point two five*

9.95 _____

50% _____

6.5 _____

75º _____

85% _____

5.5 _____

29º _____

12% _____

THE SUN • LEVEL V • 2

SKILL: SYMBOLS AND NUMBERS

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Name _____ Reading a-z

INSTRUCTIONS: Choose an adjective from the word box that best describes the noun in each sentence below. You may use your book to find the best answer.

active	remaining	huge	new	tiny
biggest	solar	dark	better	

Earth is very _____ compared to the Sun.

The _____ stars are the red giants.

The Milky Way is made up of a _____ collection of stars.

Without the Sun, Earth would be a _____ planet.

Scientists are looking for _____ ways to harness the Sun's energy.

_____ telescopes are being developed to see the Sun.

The Sun is a _____ ball of flaming gas.

During _____ times, scientists observe spots moving on the Sun.

The most violent are _____ flares.

The _____ energy is visible light.

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Natural Wonders of the World

A Reading A–Z Level V Leveled Reader
Word Count: 1,822

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Level V Leveled Reader
© 2005 Learning Page, Inc.
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Maps by Craig Frederick
Illustrations by Cende Hill

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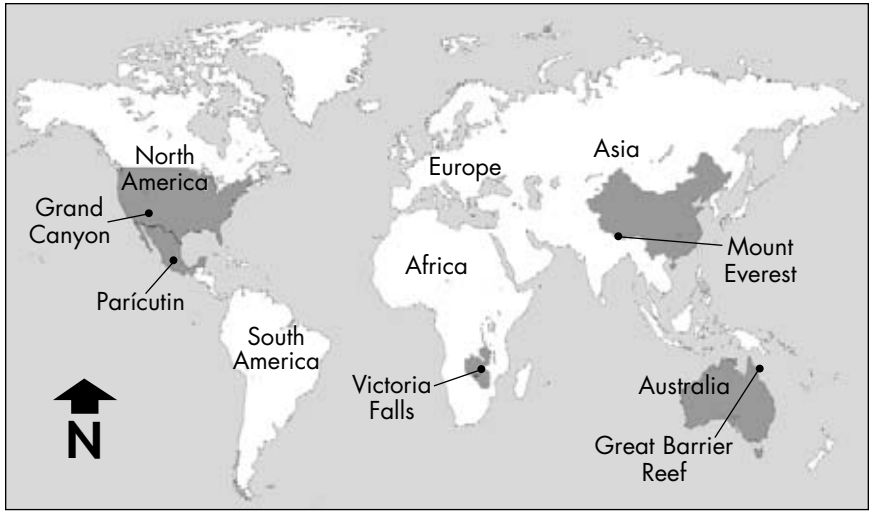

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Arizona's Barringer Meteorite Crater shows how space rocks colliding with Earth create amazing land forms.

Introduction

What makes something a natural wonder? A wonder is a natural structure so amazing and beautiful that it makes you ponder how it was formed. Natural wonders are **landforms** that have been created by nature, not by humans. Our planet is home to many natural wonders. In this book, we will learn about five of them:

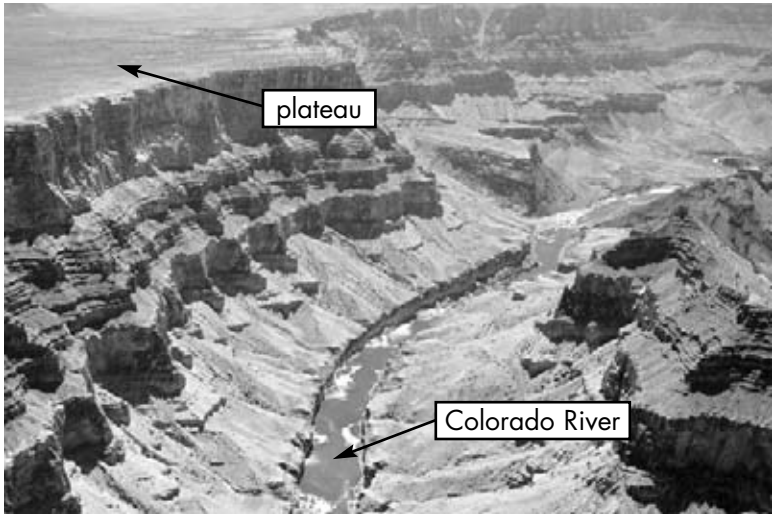
- A layered canyon carved by a river
- A young volcano that took over a village
- A breathtaking waterfall
- An immense coral reef
- A towering mountain

Grand Canyon

Between 5 and 6 million years ago, the Colorado River wound through a large **plateau** (pla-TOE), or an area of raised ground. Over time, the river picked up small pieces of the plateau and carried them as it flowed to the sea. This process is called water **erosion** (e-RO-zhun).

Different kinds of rocks factor into water erosion. Some rocks are soft and break easily, while other rocks are hard and resist breakage. In the Grand Canyon, the Colorado River flowed **downstream**, carrying pieces of the softer rocks and leaving behind the harder rocks. Over millions of years, this process carved deep canyons in the rocks.

The Colorado River slowly carved the rock of the Grand Canyon into the wondrous structure we see today.



The layers of rocks that form the Canyon walls show geologists what happened in the area over a period of 2 billion years.

These rocks make up the layers in the Canyon walls. The top of the Canyon, where most visitors enjoy their first view, is the youngest layer of the Canyon. The bottom layer, near the river, is the oldest. Scattered rocks located at the bottom of the Canyon date back as long ago as 2 billion years.

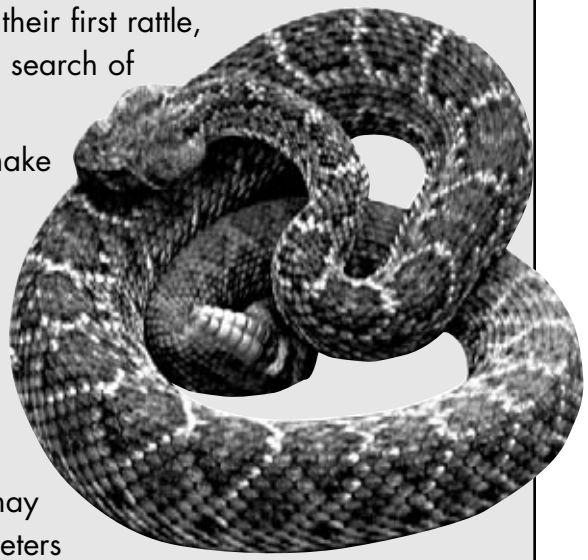
The Grand Canyon is a great place to study rocks and the earth's history because the rock layers are so easy to see and reach. **Geologists** often visit the site. One of the first geologists to visit was John Newberry, who traveled to the Canyon in 1858. Newberry was the first scientist to record the Canyon's layers, although he wasn't the first to see them.

Rattling Reptiles

More than 47 different kinds of reptiles live in the Grand Canyon. While most of these reptiles are harmless, visitors should keep an eye out for snakes. Although they rarely bite humans, the Grand Canyon rattler and the diamondback rattler are venomous.

In the winter, rattlesnakes hibernate in dens. Hundreds of rattlesnakes may live in one den. This is one of the only times rattlers live together. In the spring when the weather warms up, the snakes come out of their dens and go their separate ways.

In late summer, females give birth to live babies. The babies only stay in the area where they were born for about 7 to 10 days. Then they shed their first baby skin, add their first rattle, and move on in search of food.



As a rattlesnake grows, it sheds its skin at least once a year, adding a new rattle to its tail with each shed. A mature diamondback may grow to be 2 meters (about 7 ft.) long and weigh up to 6.8 kilograms (15 lbs.). Rattlers can live to be 25 years old.

Native Americans lived in and around the Grand Canyon for more than 4,000 years before European explorers arrived. By 1150, most of the original tribes had moved away. Only the Havasupai people remained. Some of them still live and work in the Canyon. Every year, millions of people travel to Grand Canyon National Park to hike, raft, and see this majestic wonder of nature.

Havasu Falls on the Havasupai Reservation is an example of how water continues to carve the western Grand Canyon.

Parícutin

Many of nature's creations are millions of years old. They began forming long before humans lived on Earth. Other creations have formed in modern times. The Parícutin (pa-REE-ku-ten) volcano in Mexico is one such formation.

Parícutin began forming in 1943—less than 70 years ago—in a field. A farmer discovered a **fissure** (FISH-ur), or opening in the ground, in his cornfield. The crack was about 1.8 meters (6 ft.) long. Soon more fissures appeared. Black smoke came from the holes, and ash piled up on the ground, forming a cone. In about 12 hours, the cone had grown to 10 meters (33 ft.) high and after a day, it had grown to 30 meters (98 ft.). The volcano continued to grow, reaching a height of 100 meters (328 ft.) in just a week.

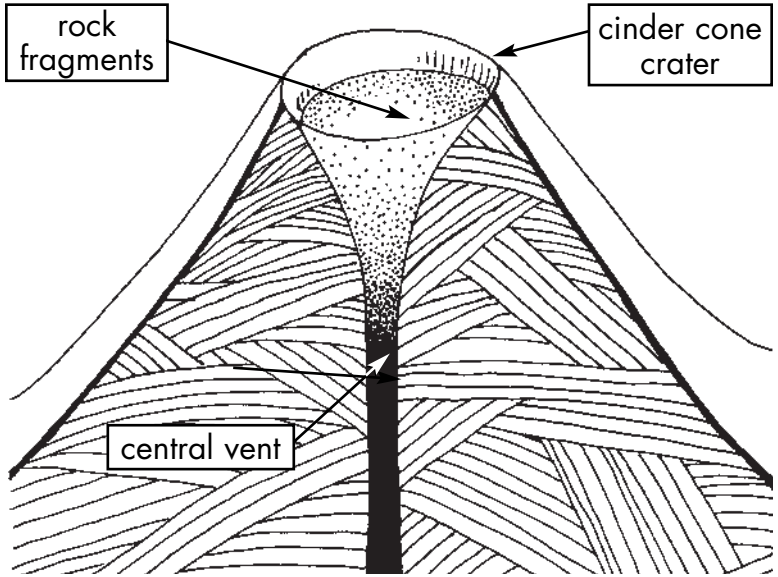
Parícutin volcano erupting in 1943

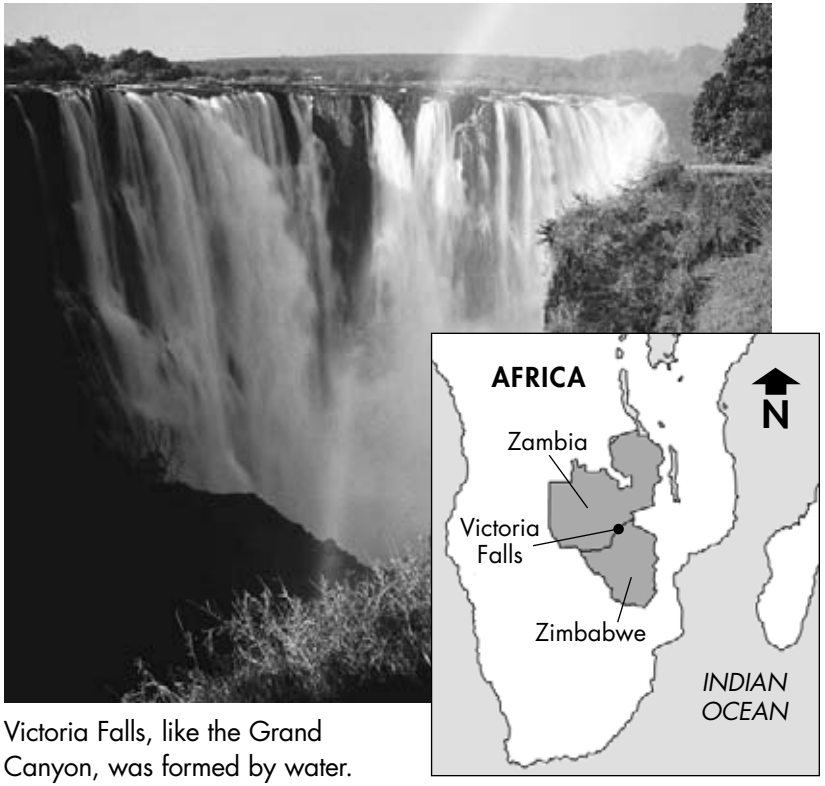
A church steeple is all that remained visible after volcanic debris covered the town of Parícutin.

The people of Parícutin hoped that their village would be safe, but after a few months the cone had grown so large that lava started to reach their town. The villagers had to evacuate, leaving behind their homes and farms. Over a nine-year period, lava and ash eventually covered the entire village of Parícutin and most of the nearby town of San Juan. Eventually, all that was left of Parícutin was the church steeple rising out of the black rock as a reminder of nature's power.

Volcanoes such as Parícutin are called **cinder cones**. They are the simplest type of volcano. Cinder cones are formed when lava, which is under pressure inside the earth, shoots out from a central vent in the ground. As the lava explodes into the air, it cools and breaks into small pieces that harden and fall as rocks and ash, or cinders, around the central vent to form a cone. Most cinder cones have a bowl-shaped crater at the top.

Because Parícutin volcano is young, scientists have been able to observe its growth since it first appeared. Today, the volcano stands about 1,396 meters (300 ft.) tall and covers 26 square kilometers (10 sq. mi.).





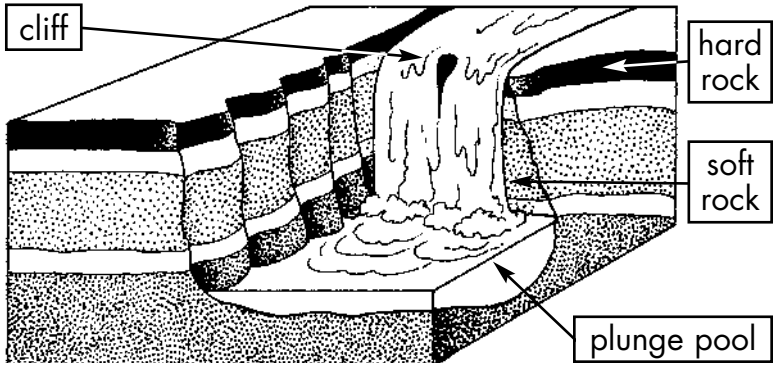
Victoria Falls, like the Grand Canyon, was formed by water.

Victoria Falls

Victoria Falls is the largest mass of falling water on the planet. The water drops 108 meters (355 ft.) into a deep pool. The people of Zambia call the falls Mosi-oa-Tunya (the smoke that thunders). It's a perfect name. The thunder refers to the booming sound created by the water crashing over the falls into the pool below. The smoke refers to the **water vapor**, or mist, that comes up from the bottom of the Falls.

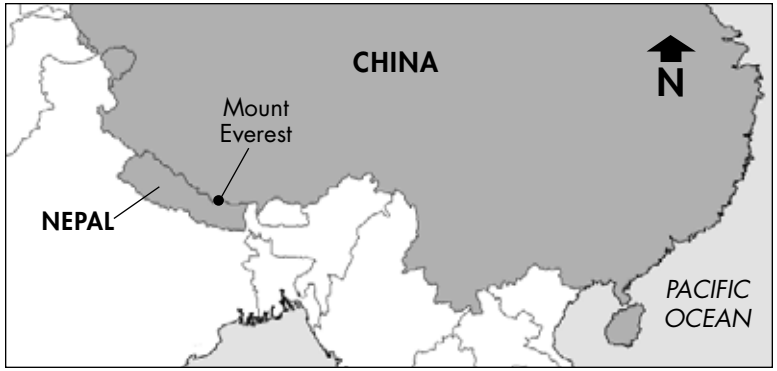
Victoria Falls is located on the border between Zambia and Zimbabwe in Africa. The Falls began forming millions of years ago when a shallow crack in the rock appeared across the path of the Zambezi River. The crack was caused when parts of the earth shifted about 150 million years ago. Over the years, the river flowed over hard rock. Eventually, the water wore down the soft rock, forming a cliff over which the river now falls. The pool into which the water falls is called a **plunge pool**.

An English explorer, David Livingston, visited the Falls in 1855. He was probably the first person from outside of Africa to see the wondrous formations. He named the Falls after Queen Victoria of England. But many people think that Mosi-oa-Tunya is a more accurate name. The Falls is now part of two national parks, one in Zambia and one in Zimbabwe.



Victoria Falls Fun Facts

- Victoria Falls is actually divided into six waterfalls: Devil's Cataract, Armchair Falls, Horseshoe Falls, Main Falls, Rainbow Falls, and the Eastern Cataract.
- A bridge at the Falls is a popular site for bungee jumping.
- During a full moon, the park stays open late so people can enjoy the rainbow that is made when moonlight shines through the water vapor.
- People go rafting and kayaking on the water below the Falls. They can even surf on the rapids below.

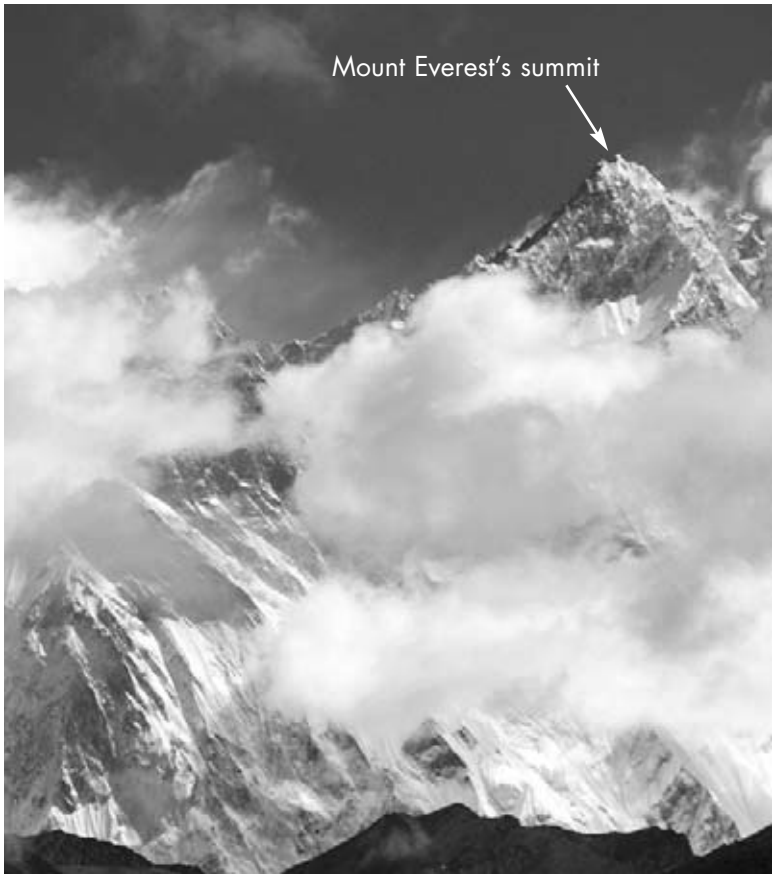


Mount Everest

Mount Everest, the tallest mountain in the world, is one of the most spectacular sites on Earth. Called "Forehead in the Sky" by the Nepali people, this magnificent landform in the Himalayan Mountains reaches a height of 8,848 meters (29,028 ft.).

The snowcapped Himalayas might appear old, but they are actually quite young for mountains. The mountains were formed millions of years ago when two parts of the earth's crust collided, or hit each other. Over time, the pressure of the two parts rubbing against each other caused the ground to crumble and rise above the sea. Since Mount Everest is a young mountain, its peaks are still jagged and steep. They haven't yet been eroded and smoothed down by endless years of wind, ice, and snow.

Although Mount Everest is beautiful to look at, the conditions on the mountain are very harsh. The average temperature is about -36°C (-33°F) and can drop to -60°C (-76°F). Even in July, the warmest month, the temperature only reaches -19°C (-2°F). It never gets above freezing and, as a result, the ice and snow at the top of the mountain never melt.



Storms dump more snow on Mount Everest every year.

The extreme conditions on Mount Everest make it hard for animals and plants to survive. One of the only animals that can live on the mountain is the wild yak. This large animal can weigh more than 454 kilograms (1,000 lbs.) and grow up to 1.8 meters (6 ft.) tall. One of the reasons the yak is able to survive is because its blood can take in more oxygen than the blood of other animals. This adaptation is a lifesaver on Mount Everest, where the air contains little oxygen.

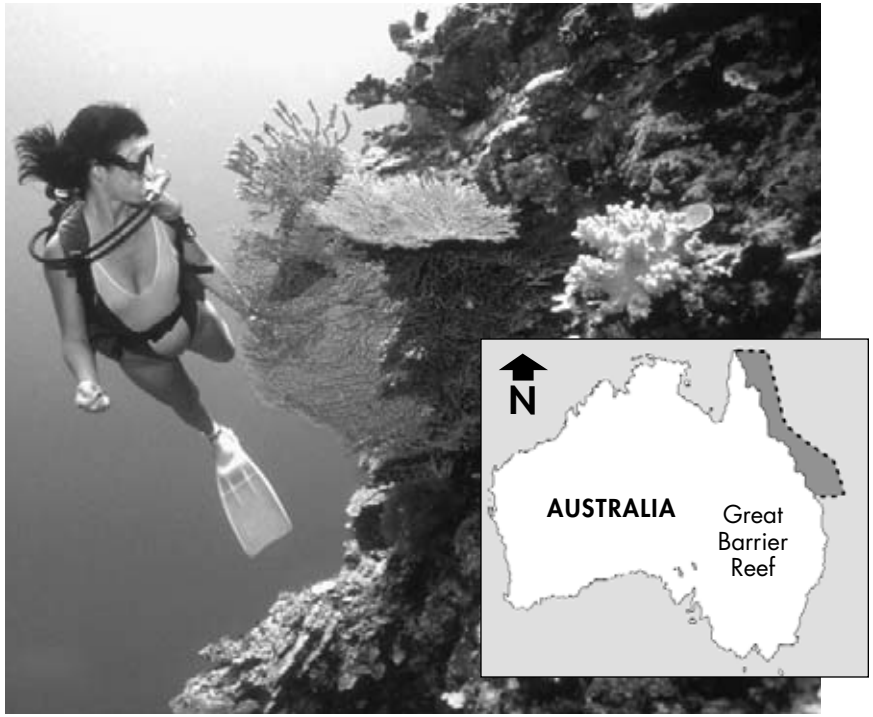
Wild yak grazing

The people who originally settled in the Himalayan Mountains believed that the gods made their homes in the peaks. As a result, no one tried to climb Mount Everest until explorers arrived in the early 1900s. The earliest climbers quickly learned about the harsh conditions on the mountain—freezing temperatures, powerful winds, changing weather, and rough **terrain**.

Mountaineers Hillary and Norgay accept awards recognizing their achievement.

Despite all the obstacles, **mountaineers** continued to come to Mount Everest, hoping to be the first to make it to the top. No one was successful until 1953, when Sir Edmund Hillary (from New Zealand) and Tenzing Norgay (a **Sherpa** from Nepal) became the first men to successfully climb the mountain. Since then, many climbers from all over the world have risked their lives to get to the top of the "Forehead in the Sky."

The **yeti** (ye-TEE), or Abominable (a-BOM-in-a-bal) Snowman, is a legend of Mount Everest and the Himalayas. Sherpas tell stories about seeing large footprints and gnawed yak bones in the mountains. Hillary's team took what was said to be a yeti scalp and skins to Europe and the United States, where scientists agreed that the scalp was from a goat and the skins were from a bear. To this day, no one has been able to prove the existence of the yeti.



A diver explores coral formations on the Great Barrier Reef.

Great Barrier Reef

The Great Barrier Reef—really a collection of many reefs—is more than 1,609 kilometers (1,000 mi.) long. It is located off the northeast coast of Australia and is full of enchanting sea creatures, from sea slugs and urchins to dolphins, whales, and sharks.

A reef is a chain, or range, of rocks that lies at or near the surface of the water. The Great Barrier Reef is a coral reef.

Coral reefs are found in all tropical oceans of the world, but none is as large as the Great Barrier Reef. Most established coral reefs are between 5,000 and 10,000 years old.

At first glance, the Great Barrier Reef might look like a rock, but it's not. It's made from the skeletons of millions of animals called **polyps** (POL-ips). As the polyps die, new ones grow on top of the old skeletons. The many layers of skeletons form the limestone base of a coral reef. Other kinds of plants and animals also help make up the reef, such as algae, sponges, and shellfish. But the tiny polyp is responsible for most of this natural wonder's structure.

The life and death of coral polyps are responsible for the formation of coral reefs such as the Great Barrier Reef.

Reefs are made from animals, and they supply food and shelter for other animals. Thousands of **species** live on the reef, including 1,500 kinds of fish, 23 kinds of marine mammals, 50 kinds of seaweed, and 6 kinds of marine turtles. The reef is also an important **breeding** area for animals, including birds, sea turtles, and the endangered humpback whale.

As one of the most interesting and beautiful places on Earth, the Reef is a popular destination for groups of scientists, scuba divers, and tourists. Today, environmentalists are working with these groups to protect the Reef so future generations can learn from it and enjoy its beauty.

Look, But Don't Touch!

Reefs are alive and full of delicate creatures. Responsible snorkelers and scuba divers should always follow these important rules:

- When snorkeling, float over the reef. Never stand on it.
- Take pictures, not coral souvenirs.
- Stock saltwater aquariums with fish that are raised in captivity, not those taken from a coral reef.
- Always pack out your plastics and other trash.
- Learn more about coral reefs and how you can help protect them.

Wonders Everywhere

From Arizona to the coast of Australia, natural wonders are everywhere. Whether they were formed millions of years ago or within the span of a lifetime, they are all unique. These amazing landforms are some of the largest, highest, and most breathtaking places on Earth. Travelers, scientists, and adventure seekers will continue to visit these special places for generations to come.

The Grand Canyon, Parícutin, Mount Everest, Victoria Falls, and Great Barrier Reef are only five of the many wonders that surround us. Other well-known natural wonders include:

- The Northern Lights, a light show that brightens up the skies in the Northern Hemisphere
- The Barringer Meteorite Crater, a massive hole in the Arizona desert that is almost a mile wide and 174 meters (570 ft.) deep
- Ayers Rock, the world's largest solid rock, rising 862.5 meters (2,830 ft.) above sea level in Uluru, Australia

Do you live near an amazing and beautiful natural wonder—an incredible mountain, a majestic river, a mysterious cave? These are all examples of wondrous sites you can visit, learn from, and enjoy every day.

Glossary

breeding producing offspring (p. 21)

cinder cones volcanos formed when airborne lava cools and settles to the ground in the shape of a cone (p. 11)

downstream in the direction that water flows (p. 5)

erosion the act of wearing away, such as water wearing away rock (p. 5)

fissure a narrow opening or crack (p. 9)

geologists people who study geology, the physical history of the earth (p. 6)

landforms natural formations on the earth's surface, such as mountains (p. 4)

mountaineers people who climb mountains (p. 18)

plateau large, flat area of high land (p. 5)

plunge pool a deep pool at the base of a waterfall (p. 13)

polyps small sea animals whose bodies form coral reefs (p. 20)

Sherpa one of a cultural group of people living in the Himalayas; these people often work as climbers' guides (p. 18)

species a class of creatures of the same kind and with the same name, such as types of fish or turtles (p. 21)

terrain the physical features of a piece of land, such as cliffs and crevices (p. 17)

water vapor water in the form of a gas or dispersed through the air (p. 12)

yeti legendary Himalayan monster (p. 18)

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Name _____

Reading a-z

INSTRUCTIONS: Reread one chapter of *Natural Wonders of the World*. Use the top box to record the important information in your own words. In the bottom box, use the information you wrote to summarize the chapter in paragraph form.

Important Information from Chapter _____

My Summary

NATURAL WONDERS OF THE WORLD • LEVEL V • 1

SKILL: SUMMARIZE

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Name _____

INSTRUCTIONS: In each corresponding box, write the missing cause or effect.

Cause	Effect
Six million years ago, the Colorado River wound through a large plateau and eroded the land.	
	The Falls were named after Queen Victoria of England.
	The church steeple is all that remains visible.
Black smoke came from the holes, and ash piled up on the ground, forming a cone.	
	Many people have died trying to reach the summit of Mount Everest.
Skeletons of millions of animals called polyps form many layers of limestone.	
	It is a popular destination for groups of scientists, scuba divers, and tourists.

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Name _____

INSTRUCTIONS: Using the word box below, choose a synonym and an antonym for each word in the second column. Put a check mark by each word after you check your answers in a thesaurus.

hideous	make	find	grand	young
destroy	abandon	ancient	lovely	pass by
tiny	inhabit	huge	mediocre	

Synonym	Word	Antonym	Thesaurus
	beautiful		
	massive		
	old		
	discover		
	majestic		
	evacuate		
	create		

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Female Sports Stars

A Reading A–Z Level V Leveled Reader
Word Count: 1,762

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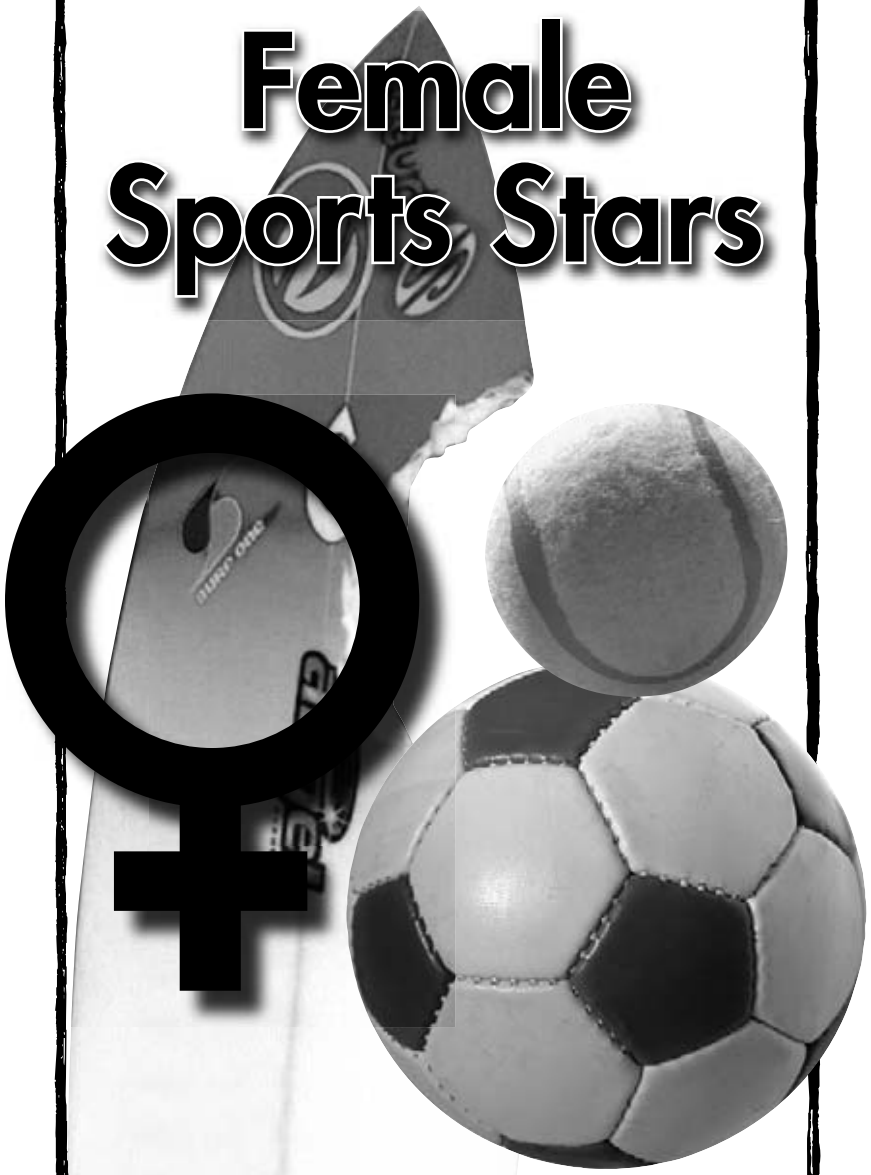
Female Sports Stars



Written by Kathie Lester

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Introduction

For many years, men **dominated** sports. But today, women compete in most of the same sports that men do. Women's professional tennis, basketball, and soccer draw thousands of **spectators**. Additionally, high schools and colleges now have women's sports teams that compete against one another in the same way that men's teams do.

There are thousands of outstanding female athletes. This book features four modern-day female athletes who have made huge impacts in their respective sports, and who serve as an inspiration to others—both female and male.

Female athletes compete against each other in a professional basketball game.

Mia kicks to score a goal.

Mia Hamm

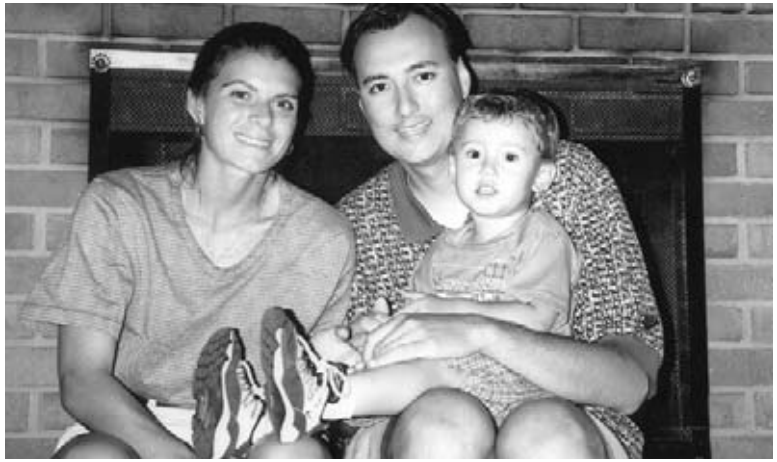
Mariel Margret Hamm, known as Mia, is considered the world's best all-around women's soccer player. During her college and professional careers, she set almost every soccer record, including that of all-time leading scorer, male or female, with 158 goals scored in international competition. With her help, the U.S. women's team won two gold and two bronze medals in the Women's World Cup, and an Olympic gold and silver. Mia retired from international competition in 2004.

Mia looks out over a pile of soccer balls at the entrance to the goalkeeper's net.

Mia grew up with five brothers and sisters. She says they taught her the importance of teamwork. As a child, she would often quit games before they were over because she hated to lose. But when her brothers and sisters refused to play with her, she learned to accept losing along with winning. When her older brother Garrett beat her at backyard games, she decided to **dedicate** herself to becoming a winner. To her, winning is everything. Winning, however, isn't just about who has the highest score at the end of the game, but rather about who plays the best and most fairly.

Mia stresses the importance of working hard on individual drills, but to her, teamwork is what's really important. She says, "I believe that to fit into a team, no individual can put her needs above those of the team as a whole. I am a member of a team, and I rely on the team, I defer to it and sacrifice for it, because the team, not the individual, is the ultimate champion."

In 1997, Mia's brother Garrett developed aplastic anemia, a rare blood disease that affected his **bone marrow**. He received a bone marrow **transplant** from a healthy donor, which might have cured him, but unfortunately he died of complications from the transplant. Mia learned a lot about courage and strength from Garrett's brave struggle with his illness.



Mia with her brother Garrett and her nephew Dillon.

To **commemorate** Garrett's life and to help others with similar struggles, the Mia Hamm Foundation raises money for bone marrow research, and to support families of people who receive transplants. The Foundation also works to raise awareness about transplants, since it is often hard for people who need a transplant to find a good medical match.

The second part of the mission of the Mia Hamm Foundation is to develop more opportunities for young women to participate in sports. Opportunities for girls to compete in sports were rare when Mia started playing soccer. As a result, Mia's Foundation works to develop new programs that support young women in sports.

Mia says, "My goal is to leave a positive and lasting **legacy** in the research of bone marrow diseases and for every female athlete to have the opportunity to play the sports they love."

The Williams sisters pose with U.S. President Ronald Reagan and first lady Nancy Reagan at a tennis event in 1990.

Venus and Serena Williams

In 1978, Richard Williams watched on television as Virginia Ruzici won $22,000 in the French Open women's singles tennis tournament. He realized that tennis could be a way to earn a lot of money. Richard claims to have known before the birth of his daughters Venus and Serena that they would become tennis champions. While he waited for them to grow big enough to hold a tennis racquet, he taught himself and his wife, Oracene, how to play tennis by studying videos and books on the subject.

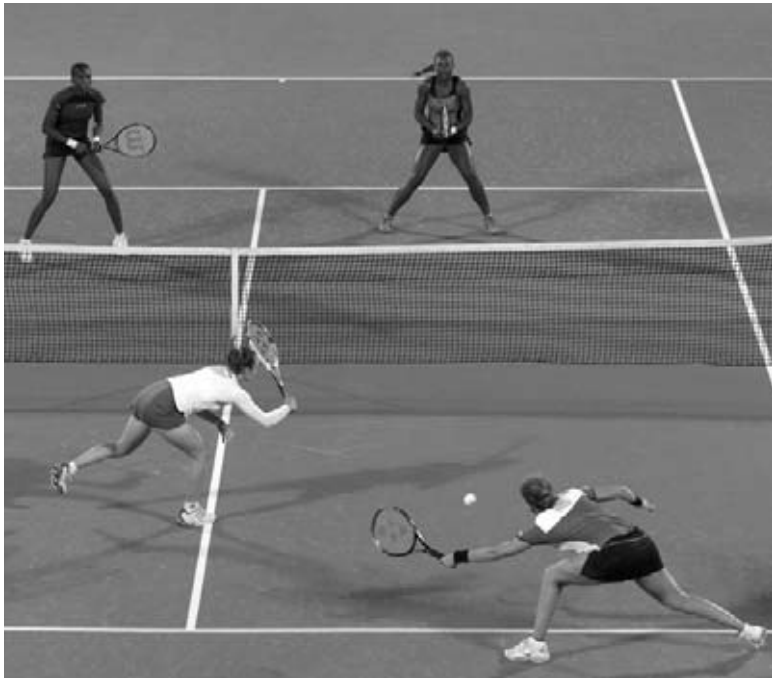
Serena and Venus pose for a photograph at Wimbledon in 2000.

The family lived in Compton, California. It was a tough place to grow up with its drug dealers and gangs. When the girls were young, they would pack the family car with racquets, tennis balls, and a broom, and go to the local park to practice. The courts were littered with trash, and the girls had to sweep them clean before they could play.

As a young girl, Venus watched tennis matches on TV, and learned by studying the professionals. She figured out that the winners could find the weakness in an opponent's game and then repeatedly hit the ball to that weak area. She also studied the footwork of the pros, applying what she learned to her own play and teaching her younger sister.

Venus and Serena shared their father's dream that they would become the best tennis players in the world. As their coach, Richard worked them hard, but he also insisted that they concentrate on their schoolwork. Serena says, "Being well educated helps us succeed both on and off the court." Venus and Serena were encouraged to excel in everything they did, not to earn praise from others, but to satisfy themselves.

Richard Williams practices with his daughter, Serena.



The Williams sisters compete against Martina Hingis and Monica Seles in a doubles match in Sydney, Australia.

Venus and Serena, a year apart in age, each entered their first professional tournament at age 14. They quickly began winning against older, more well-known players. Since then, the Williams sisters have won every big name tournament, including the French Open, the U.S. Open, and Wimbledon. They compete in **singles**, sometimes playing against each other, and in **doubles**, playing together as a team. At various times, each of them has been ranked number one in the world.

As children who grew up in the city, Venus and Serena recognized that inner-city high school students often had trouble earning tennis **scholarships** because they didn't have the necessary training and support. As a result, the sisters founded the Venus and Serena Williams Tutorial/Tennis Academy, which provides inner-city students with tennis lessons, tutoring, financial aid, and career counseling.

The Williams sisters play as much tennis as possible, making the most of what is available to them while they are still at the top of their game. They also attend college to prepare for their lives after tennis, and they hold down other jobs. They stress the importance of education, and of constantly challenging oneself to work hard and set new goals.

Both women have studied fashion design; Serena is developing her clothing line, called Aneres (Serena spelled backward). Venus has an interior design company called V Starr Interiors. Both sisters have acted and hope to work in movies.

Their natural curiosity keeps them busy learning new things. Serena, the outgoing sister, likes to learn new languages so she can talk to

Serena and Venus pose backstage at a "Fashion Rocks" concert in New York City.

people when she travels. She can speak French, Spanish, Italian, and Portuguese. Venus, who is shyer than her sister, is a bookworm. She likes to read about many different subjects. The sisters credit their success to hard work and a positive attitude. Serena says, "When you're really going for something, you can't think about your doubts. You have to push them out of your head and replace them with positive thoughts like 'I can do this.'"

Memorable Moments

June 17, 1980 — Venus Williams is born.

September 26, 1981 — Serena Williams is born.

1990 — At 10, Venus becomes the top-ranked female player under 12 in southern California.

October 31, 1994 — Venus enters her first pro tournament.

September 1997 — Venus makes her first U.S. Open appearance.

1998 — Venus wins her first Women's Tennis Association (WTA) singles championship.

2000 — Venus wins Wimbledon, her first Grand Slam singles title.

2001 — The Williams sisters meet in a Grand Slam finals match for the first time in the U.S. Open; Venus wins the championship.

2002 — The Williams sisters face off in the Wimbledon finals; Serena wins.

2003 — For the second year in a row, the Williams sisters face off in the Wimbledon singles finals; Serena wins.

2005 — Venus wins Wimbledon. Serena wins the Australian Open.

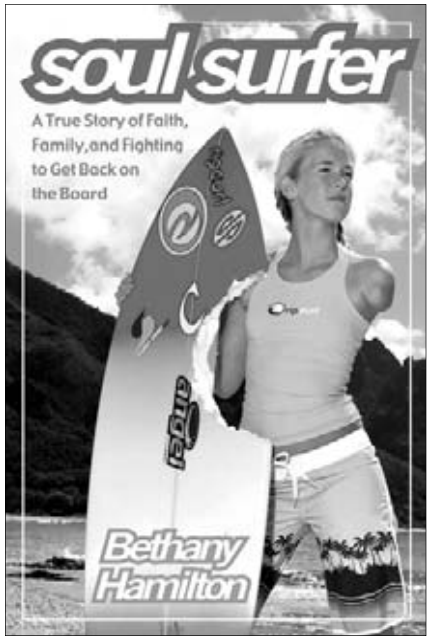
Bethany rides a wave prior to the shark attack.

Bethany Hamilton

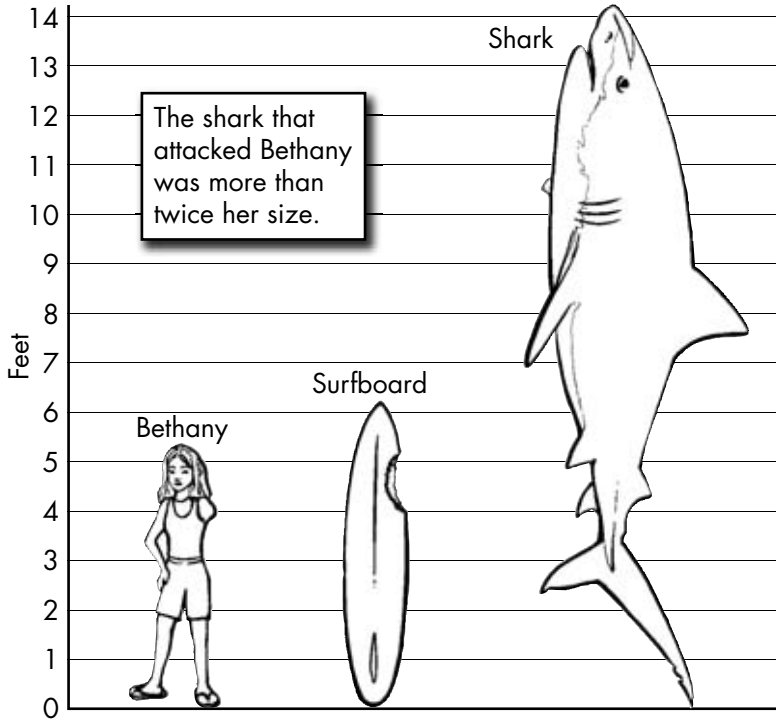
Tom and Cheri Hamilton grew up loving to surf, Tom in New Jersey and Cheri in California. After high school, they both moved to Kauai, Hawaii, to take advantage of the great surfing. There they met, married, and had three children —two sons and Bethany. All three children were born surfers. Bethany's older brothers dared her to try everything they did. She says their pushing made her adventurous and competitive. She played other sports, such as soccer, but preferred to concentrate on surfing.

Bethany began entering surfing competitions at age 8, and dreamed of becoming a professional surfer. She was 13 years old on October 31, 2003. On that day, while surfing with friends near Tunnels Beach, a 14-foot tiger shark attacked her. Bethany said, "My arm was hanging in the water, and it just came and bit me. It kind of pulled me back and forth. But I just held onto my board and then the shark let go." The shark tore off Bethany's left arm just below her shoulder.

A nearby surfer made a **tourniquet** from a rubber surf leash, which kept the bleeding under control while they paddled one-quarter mile back to shore. Bethany's doctors say that her athletic training helped her to survive the shock and blood loss, but Bethany thinks that's not the whole story. She says, "I might not be here if I hadn't asked for God's help. I look at everything that's happened as part of God's plan for my life."



Bethany's book, *Soul Surfer,* tells her story of faith and courage.



While she was healing, Bethany thought for a while that she might not surf again. She was concerned that it would be much harder to stand up on the board using only one hand and that her balance would be completely off. But with hard work and determination she returned to surfing. She says, "It's hard for me to describe the joy I felt after I stood up and rode a wave in for the first time after the attack. I was incredibly thankful and happy inside. The tiny bit of doubt that would sometimes tell me 'You'll never surf again' was gone in one wave!"

As for fear of another shark attack, Bethany says that sometimes her heart pounds when she sees a shadow under the water and she still has occasional bad dreams about being attacked by a shark. But she believes that "God is watching out for me, and while I don't want to do something stupid like paddling out where someone has just seen a shark, in the end, I trust Him to take care of me."

Bethany had to regain her sense of balance to surf again.

Bethany has returned to her pre-attack routine of **strenuous** workouts, school, and surfing competitions. She says that she has a lot to be thankful for. When people tell her that she's an inspiration, she responds, "I just want to be a sign along the way that points toward heaven." She believes that faith provides hope and a future for those who feel down or defeated in their lives.

Bethany's popularity and hope for the future led her to partner with World Vision to create "Surfing for Children in Crisis." Bethany hopes that her involvement in the campaign will help provide disabled children from around the world with essential care, support, and hope.

Bethany accepts the award for "Choice Courage" at the *Teen Choice Awards*.

Conclusion

Not every girl has the soccer talent of Mia Hamm, the tennis skills of the Williams sisters, or the surfing ability of Bethany Hamilton. Not everyone is destined to be a star athlete like these four. Whether your dream is to excel in sports, medicine, art, music, or another field, these star athletes can provide inspiration. Their message is to believe in yourself, work hard, and pursue your dreams.

Women's Sports Firsts

- In 1900, women began competing in the Olympics in Paris, France. Initially, women could only compete in golf and tennis.
- The first women's professional football league was started in 1974 with a seven-team, ten-game schedule. Each player earned $25 a game.
- In 1997, more high school girls than ever before participated in sports—2,472,043 girls!
- The Women's Basketball Hall of Fame, located in Knoxville, Tennessee, opened in 1999.
- On April 14, 2001, the Women's United Soccer Association held its first game.
- In 2001, the first Women's Amateur World Boxing Championships were held in Scranton, Pennsylvania. The event drew more than 150 competitors from 35 nations.
- In 2004, more women participated in the Olympic games than ever before—44 percent of the athletes were women!

Glossary

bone marrow	the body tissue that fills the center of bones and produces red blood cells (p. 7)
commemorate	to honor the memory of (p. 8)
dedicate	to commit yourself to something (p. 6)
dominated	to have had a continuing power over something (p. 4)
doubles	a game with two players on each side (p. 12)
legacy	something left to somebody (p. 8)
singles	a game with one player on each side (p. 12)
scholarships	money given to students to help pay for their college education (p. 13)
spectators	people who watch an event (p. 4)
strenuous	requiring great effort, energy, and strength (p. 20)
tourniquet	a bandage that stops the flow of blood from an artery by applying pressure (p. 17)
transplant	to move an organ, blood, or tissue from one body to another (p. 7)

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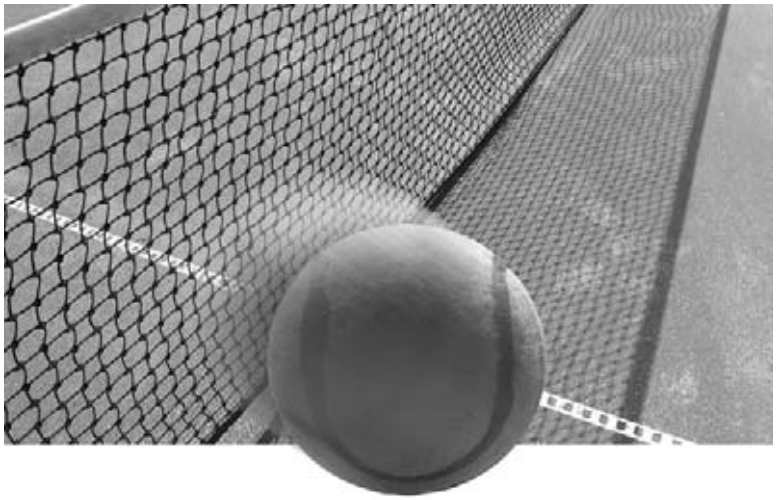

Name _____

Reading a-z

INSTRUCTIONS: Identify and list the important events from *Female Sports Stars* in the *Important Event* boxes. Then use the information to create a summary in the *Summary* box.

Important Event	Important Event	Important Event	Important Event

Summary
_____
_____
_____
_____
_____
_____
_____

FEMALE SPORTS STARS • LEVEL V • 1

SKILL: SUMMARIZE

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Name _____

Reading a-z

INSTRUCTIONS: Read the sentences below. Identify the *independent clause*, the *dependent clause*, and the *conjunction* in each complex sentence and write them on the lines provided.

1. A surfer made a tourniquet for Bethany so that the wound would bleed less.

Independent clause: _____

Dependent clause: _____

Conjunction: _____

2. Although Mia retired from soccer, she continues to have a positive impact on others.

Independent clause: _____

Dependent clause: _____

Conjunction: _____

3. Venus and Serena excelled at what they did because they wanted to satisfy themselves.

Independent clause: _____

Dependent clause: _____

Conjunction: _____

4. The Williams sisters studied and practiced the game of tennis while they were growing up.

Independent clause: _____

Dependent clause: _____

Conjunction: _____

5. After her siblings refused to play with her, Mia learned to accept losing along with winning.

Independent clause: _____

Dependent clause: _____

Conjunction: _____

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Name _____

Reading a-z

INSTRUCTIONS: Use a thesaurus to choose a **synonym** and an **antonym** for each word in the first column. Write each word in the appropriate space on the chart. Then write a sentence using either the synonym or antonym.

Words	Synonym	Antonym	Sentence
talented			
competitive			
dedicated			
ordinary			
outstanding			

FEMALE SPORTS STARS • LEVEL V • 3

SKILL: SYNONYMS AND ANTONYMS

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Mirroring Miranda

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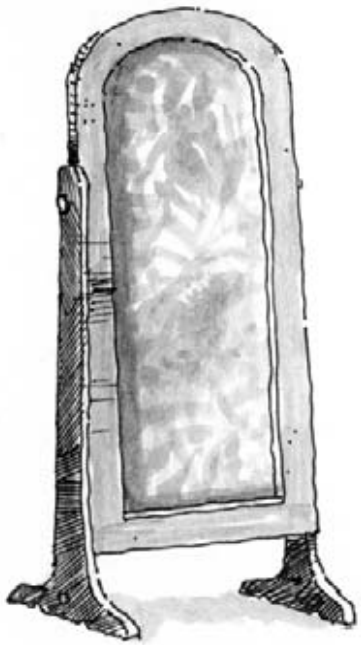

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Chapter 1

Miranda James looked long and hard at the 12-year-old girl in the mirror. "This is the summer you are going to do it, girl!" she said aloud. "You are going to write a **science fiction** story that will get published, and win the Hugo Award or the Nebula Award or maybe even both."

Isaac Asimov, Ray Bradbury, Robert Heinlein, Ursula Le Guin and all the great sci-fi, or SF writers won these prestigious science fiction awards. These, and other famous SF authors, were on Miranda's alphabetized, must-read list. Then she penciled-in her own name: James, between Heinlein and Le Guin. Thinking about her future fame sent a cold shiver up her spine.

Her award-winning story would become a bestseller, no doubt, then get turned into a blockbuster movie starring . . . oh well, Miranda had lots of time to figure out that part. First, she had to write the story.

This would not be Miranda's first science fiction story. She wrote seventeen other science fiction stories and submitted every one of them to her favorite sci-fi magazine, *Future Tense*. So what if she received seventeen **rejection** letters? With each letter she received an encouraging note back from the editor.

"Dear Sir/Madam: Thank you for your **submission**. However, it does not meet our publishing needs at this time. Good luck with your future **endeavors**."

Miranda didn't care that they were rejection letters. The editor had said "good"! Strangely, when Miranda read the letter aloud and reached the word "good," she faintly heard it echo from her bedroom mirror. Or at least she thought she heard it. Either way, she took it as an encouraging sign and vowed to eat, sleep, breathe, and, most importantly, read science fiction all through the summer.

Although the list she had made of sci–fi authors was in alphabetical order, Miranda decided to read the authors in a **random** order. Randomness felt more like science fiction to her. As it turned out, she ended up reading a ***different number of books by each author*** by the end of the summer. In fact, Miranda ***had read two books by C. J. Cherryh*** and had learned a lot about Ms. Cherryh's sci-fi style.

Chapter 2

"What are you doing in your room on this beautiful day?" asked her brother Harris, a senior in high school. "I hope you're not talking to yourself again."

"Maybe I am, and then again maybe the voice you heard was an android in the fourth dimension controlling your mind," said Miranda. She had just started reading a book about androids—robots that look like humans. The day before, she finished a book set in the fourth dimension, which meant time was constantly shifting in a mind-freaky way. Next, she planned to read a book about an evil scientist who invents a ray gun that zombifies people so that he can take over the world.

"I'm taking the dog to the park to play fetch. Want to come?" asked Harris.

"You go. I have work to do," Miranda replied.

"Not another one of your ridiculous stories!" exclaimed Harris.

"They are not ridiculous! They are what we science fiction writers call '**cautionary** tales.'"

"Well, I hope it is better than the one about the mutant broccoli that grew so big it squished Milwaukee," teased Harris.

"It was a zucchini, for your information, and it was Cincinnati that got squashed! Don't you get it? Zucchini is a type of a squash. That is what we writers call a play on words. And because the greedy agribusiness overlords were using illegal fertilizer that accidentally gets zapped with radioactive waste dumped on it by the corrupt politicians who ran the nuclear power plant, the zucchini grows so big it *squashes* them all. Tit-for-tat. We sci-fi writers call this an **allegory**."

"Well," spouted Harris, "if you feel like exercising something besides your overactive imagination, let me know. We nonwriters call this an invitation."

That Harris made her so mad! He told her to leave science fiction to boys; she should write stories about lost kittens, pink princesses, and wild horses. Miranda knew some girls who liked that romantic stuff, but it made her want to throw up. Still, Harris was right about getting exercise, so she **reluctantly** put aside her writing and rode her bike to the library. She checked out ***an odd number of books by Ursula K. Le Guin***—"a female sci-fi writer, thank you!" she said aloud to Harris, though Harris wasn't anywhere around.

Miranda looked at her list of authors and now planned to read ***more books by female sci-fi writers***. Plus, she figured that an odd number would be a good idea because odd was sort of weird, and she felt a weird story brewing inside of her.

Chapter 3

Dozens of tales rambled around James Miranda's brain, waiting to be put on paper. But the guys in his class laughed at him whenever he told them his stories about knights in shining armor saving damsels in distress. "No wonder," said his big sister. "That's girl stuff." But James' adventures also had wizards and trolls and ice-breathing dragons, he explained.

His sister didn't listen. She told him to get a life. Because if he had a life, he'd not only have fun, he'd have something real to write about.

James had plenty of fun writing his stories, thank you very much. One day, he'd be famous because of them, too. So he just kept writing what he felt he had to write. "They are good stories," he heard the voice inside him say.

And then he would say aloud: "Good."

Reading all these science fiction books is definitely helping my writing, Miranda thought. So far, she especially enjoyed the space-travel books by ***Arthur C. Clarke. Too bad she had not read him first***.

Clarke's books were considered "pure" science fiction. They were made-up stories, but based on scientific truths. His books looked at how real scientific discoveries could put people in situations where they had to make decisions that could change people's lives for the better—or worse.

"Heavy stuff," said Miranda aloud. Then she felt another chill come over her. At first she thought it came from her realization that in the best sci-fi, mastering science often meant power over nature—just not *human* nature. But it was not a tingly feeling she was feeling, it was an icy blast, as if she was standing in front of an air conditioner that had just turned on. Once again she was in front of the mirror in her room, her hot, air-conditioner-less, fan-less room.

Feeling creeped out, she reached out to touch the mirror. It was cold to her touch, colder than an ice cube, almost as cold as frozen carbon dioxide gas, which she had been researching to use in a story. When she touched the mirror with her index finger, it turned numb. If she hadn't flinched, Miranda was sure her finger would have stuck to the mirror!

Then Miranda tried a different experiment. She breathed on the mirror. It fogged up. That reminded Miranda of when she was younger, and would breathe onto the cold car window in winter. When it fogged up, which she now knew was caused by **condensation**, she'd write her name on the window, then watch the letters disappear as the fog **evaporated**. The cool part was that the letters in her name would reappear magically if she blew another warm breath on the same spot. Now she knew it wasn't magic that caused this, it was science.

What was strange now, however, was that this wasn't winter, there wasn't a car window, and when the fog evaporated from the mirror, Miranda could read her name as she had written it on her alphabetized reading list: James Miranda—last name first. But, she had not written her name that way on the mirror . . . she shivered again.

Chapter 4

Had Miranda written her name that way on the mirror a long time ago? To take her mind off this creepy feeling, Miranda picked up a book by ***Roger Zelazny. He was the fourth sci-fi author she would read that summer***. She studied his picture on the book jacket. The biographical notes said he died a few years ago, and often wrote about magic and fantasy worlds.

Miranda read late into the night. Her eyes burned, but she couldn't stop. She had to find out what happened to Zelazny's famous character, Prince Corwin of Amber.

Sometime around midnight, Miranda dozed off. She dreamed that a dark-haired boy in a tuxedo spoke to her from the mirror.

"You can do it," he said. "Just keep writing."

Miranda woke up in a cold sweat. "Bong, bong," struck the grandfather clock in the dining room. *"Two o'clock in the morning would be a good time for something spooky to happen in one of my stories,"* Miranda said to herself as she reached for her journal to make some late-night notes. As she gazed at the mirror, another icy blast swooshed past her, and she froze momentarily. All of a sudden a face peered at her from what seemed like inside the mirror. "Oh my gosh! You're . . . Zelazny Roger!" she cried.

Chapter 5

Prince Saffron sheathed his sword and raised his shield. "Onward, Valiant," he commanded, and his enormous, white steed took off at full gallop. Acitcratna, the ice-breathing dragon, had turned the princess into an ice sculpture.

"I'm not Zelazny Roger," said the voice in the mirror. "But I, too, am a magnificent writer, and if you'll excuse me, I have to go save a princess."

Was Miranda still dreaming? "Ow!" she cried as she pinched herself. Nope, she was awake. Or was she in a nightmare in which she was dreaming she was awake?

Hadn't she read a story where something like that happened? She checked her notes. It could have been one of the books by ***Octavia Butler, who was the third author she had read . . . Or could it have been one of the five books she read by the previous author?***

Maybe Harris was correct about her need to take a break from sci-fi. Then she realized what must be happening.

"All right, Harris," she said. "I know you are playing a trick on me. Ha-ha, you got me. You can come out now."

"My name isn't Harris," said the face in the mirror. "It is Miranda. James Miranda."

"James . . . Miranda? That's my name, too, but backward," said Miranda. "I'm Miranda James."

"I know," said the face in the mirror. The face belonged to a boy that seemed to be about 12 years old. In fact, the face looked like Miranda's—if she had been a boy.

"I've been trying to reach you," said James. "I sent you a message on the mirror, but my first attempt wasn't strong enough. Only my . . . our name made it through."

"James Miranda! On the mirror! So I wasn't making it up. It really happened."

"It is still happening," James said.

"Whoa! This is freaky. And awesome, just like a real science fiction story! You are me but in some bizarre parallel universe where things are backward or inside-out or . . ."

"Spirit twins is what we call them in my world," explained James. "Only a select few have them, which means that this is a rare gift." Then he explained about brain waves **intersecting** in a black hole in outer space, and why he had chosen to make himself known to Miranda, and how it would give him an actual true-life story of adventure to write.

Miranda was **enraptured** and took down everything James said. This was something no one was going to believe so she made sure she captured every word.

Epilogue

Miranda managed to capture the details of her talk with James in her journal. And the journal became a book. She claims the part about freezing time molecules in carbon dioxide crystals to make a **portal** to the mirror world was the only part she made up. But that wasn't the main reason her first book, *Pen Pal in the Looking Glass*, became a bestseller. It was the way Miranda was able to blend science with fiction, so that the reader was never sure where the science ended and the fiction began, and vice-versa.

This is what keeps her fans coming back for more. Look for other sci-fi books by Miranda James in your local library. They are guaranteed to be a creepy read!

Glossary

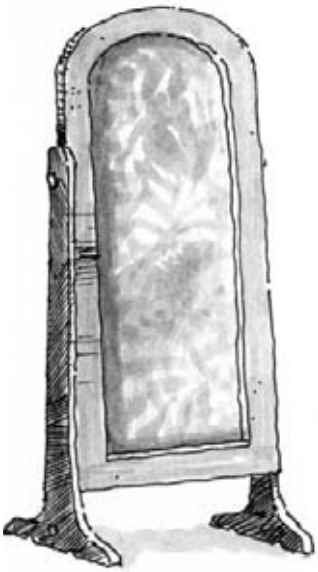
allegory	a story in which the people, events, or things have hidden meanings (p. 9)
cautionary	warning of danger (p. 9)
condensation	the act of changing from gas to liquid, such as water vapor to water (p. 15)
endeavors	serious efforts or tries (p. 6)
enraptured	to be filled with great delight (p. 22)
evaporated	to be changed from liquid to gas (p. 15)
intersecting	cutting or crossing another object (p. 22)
portal	a doorway or gate (p. 23)
random	without any sort of order (p. 7)
rejection	having been refused or denied (p. 6)
reluctantly	doing something unwillingly (p. 10)
science fiction	a type of made-up story that uses imagination, often uses fantasy, and a real or imagined scientific idea (p. 4)
submission	a work judged or reviewed by someone else (p. 6)

Logic Quiz

Miranda read 15 books by five authors on her summer vacation. Use the ***bold-italic*** clues in the text to find how many books she read by each author, and the order in which she read each author's books.

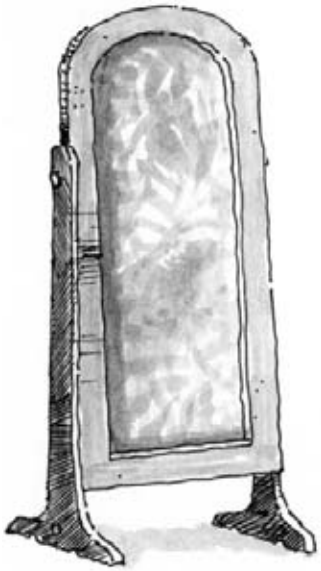
Name _____

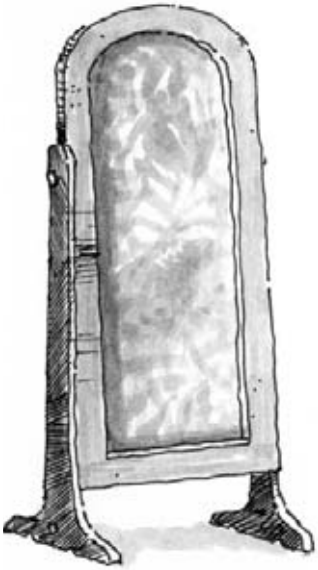
INSTRUCTIONS: Identify elements of science fiction in the story *Mirroring Miranda*. Record the information under the appropriate heading below.



Advanced Technology

Scientific Ideas





Unusual Setting/Fantasy

MIRRORING MIRANDA • LEVEL V • 1

SKILL: ELEMENTS OF SCIENCE FICTION

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Name _____

Reading a-z

INSTRUCTIONS: Identify and list the important events from *Mirroring Miranda* in the *Important Event* boxes. Then use the information to create a summary in the *Summary* box.

Important Event

Important Event

Important Event

Important Event

Summary

_____

_____

_____

_____

_____

_____

_____

_____

MIRRORING MIRANDA • LEVEL V • 2

SKILL: SUMMARIZE

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Name _____

Reading a-z

INSTRUCTIONS: Read each sentence. Choose two words from the box that create a hyphenated compound adjective that completes the sentence. Write the new word in the blank space and underline the noun that each adjective describes.

late	ice	well	romantic
full	read	length	magically
night	well	cold	breathing
known	style	ice	reappearing

1. James wrote adventures about ___ice-breathing___ dragons.

2. After reading so many books, Miranda was a _____ child of science fiction.

3. The image of James Miranda appeared in the _____ mirror.

4. Miranda wanted to be a _____ science fiction writer.

5. The _____ letters on the mirror were the result of science, not magic.

6. Miranda felt an _____ shiver go up her spine.

7. Miranda did not like the _____ writing that was popular with other girls.

8. The details from Miranda's _____ notes became her book.

MIRRORING MIRANDA • LEVEL V • 3

SKILL: COMPOUND ADJECTIVES

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Name _____

Reading a-z

INSTRUCTIONS: Use the dictionary to identify the definition of each word in the homophone pair. Write the definition on the line under the heading *Definition*. Then use the definitions to write one sentence that includes both words in the homophone pair. You may add suffixes such as *-ed*, *-s*, or *-ing* to the homophones to make them work in the sentence.

Word	Definition	Sentence
ate	to have eaten	I was full after I ate eight pieces of pizza.
eight	the whole number between seven and nine	
know		
no		
some		
sum		
one		
won		

MIRRORING MIRANDA • LEVEL V • 4

SKILL: HOMOPHONES

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Sister Sleuth and the Silver Blaze

A Reading A–Z Level V Leveled Reader
Word Count: 2,117

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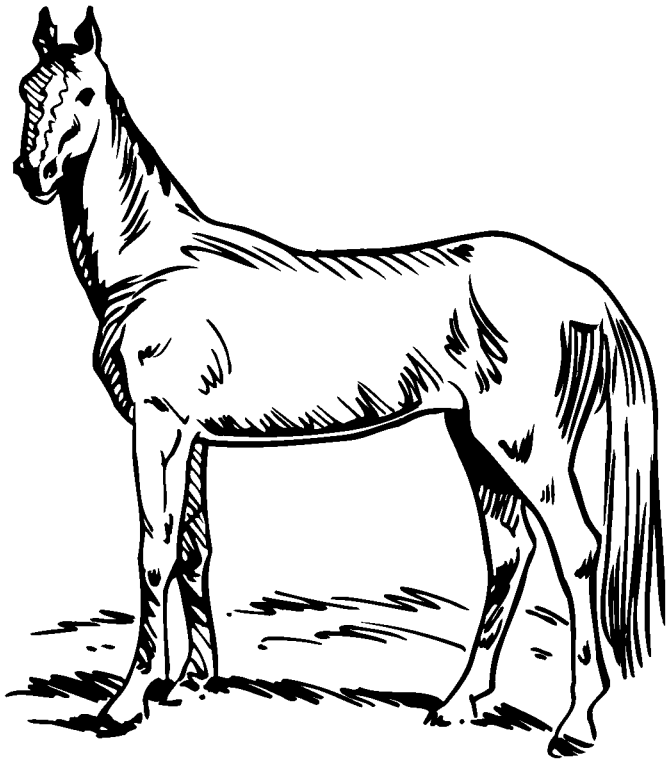
Sister Sleuth and the Silver Blaze



A Great Gallardo Book Written by Lori Polydoros
Illustrated by David Cockcroft

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Sister Sleuth and the Silver Blaze

A Great Gallardo Book
Written by Lori Polydoros
Illustrated by David Cockcroft

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Note: *Sister Sleuth and the Silver Blaze* is the third in a continuing series written by Lori Polydoros. Travel with Miguel Ventura and his family as they experience classic adventures.

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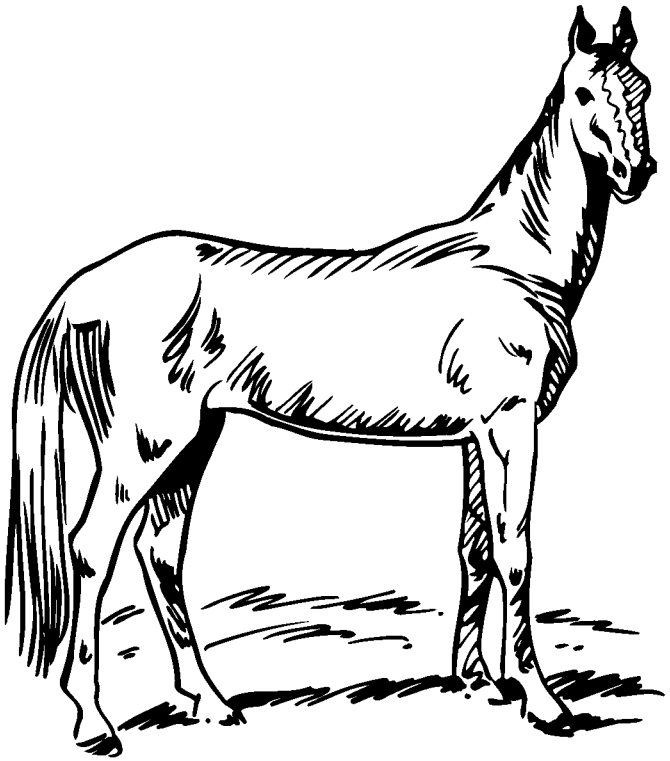

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Summertime Blues

Summer was here. The beaches were blazing hot, the parks were packed, but Miguel was stuck working at his family's sandwich shop. To make it worse, his seven-year-old sister was driving him crazy.

"Teresa!" Miguel shouted. "Get your toys off of the counter. I just cleaned it."

"You're bossy," she said, swiping her figurines into her arms. Teresa was **obsessed** with her horses. "Maybe if you played with me, you wouldn't be in such a bad mood."

"Playing with horses," Miguel said as he stared out the window, "wouldn't make me feel any better."

"You're a meanie," she mumbled, "with no imagination."

Miguel rolled his eyes and glanced around the shop to see his mom chatting with their only customer. Dad was out making deliveries. Teresa was back in horse land. It might be the perfect time for Miguel to take a little trip up to the loft.

During the school year, Miguel had discovered an old chest full of magical books in the loft of the backroom. They belonged to his great-grandfather, a magician called The Great Gallardo. After reading a few of these books, he had been transported into the stories as one of the characters. So far, he'd become Ben Franklin's grandson and Huckleberry Finn. He'd also battled a monster on the moon and rounded up cattle in the Old West. He couldn't wait to see what The Great Gallardo's books had in store for him next!

After scrambling up the ladder, Miguel found a miniature, golden statue of a horse on top of the chest. "Oh no," he whispered. "Could Teresa have found the books too?"

He prayed that she hadn't found them as he carelessly tossed the statue to the floor. It slid across the smooth wood and banged down the ladder. A book from the chest awaited him.

*"The **Memoirs** of Sherlock Holmes!"* Miguel loved mysteries, and Sherlock Holmes was a famous detective. Miguel read the first paragraph and nothing happened. Usually, the words mixed themselves up just before he mysteriously went into the story. Miguel read the whole first page, but he remained in the loft. He hung his head thinking that maybe the magic was gone.

Mysteries on the Moor

Frustrated, Miguel tossed the book back into the chest. Footsteps padded on the floor below him. He peered down, but saw no one, so he tried to catch a glimpse of the golden horse that he threw from the loft, but saw nothing. The back room was unusually quiet.

Before Miguel could climb down the ladder to check things out, the Sherlock Holmes book opened in front of him. The pages fluttered forward and back, until the book opened to page 185.

"The Adventure of the Silver Blaze!" Miguel read. "I'll try one more time. It's got to work."

Miguel read, "'I'm afraid Watson, that I shall have to go,' said Holmes.

'Go? Where to?'

'To Dartmoor—to King's Pyland.'"

Miguel felt a chilly breeze on his neck as the words began dancing around on the page.

Was my wonder that already up case had extraordinary surprised. I in only mixed this been was Indeed

Miguel opened his eyes to find a man standing next to him wearing a **tweed** coat, a weird cap with earflaps, and smoking a pipe.

Sherlock Holmes! Miguel thought.

Miguel glanced down at himself, dressed in a gray suit with a black top hat upon his head. He could only guess that he'd become . . .

"Dr. Watson!" Holmes said.

Miguel jumped.

"Still with us?" he asked, as two other men appeared behind him.

Miguel nodded as a train chugging away down the tracks caught his attention.

"Welcome!" said a small man with long sideburns. "I'm Colonel Ross, and this is Inspector Gregory."

Holmes shook their hands. "Meet Dr. Watson, my closest friend and **colleague**."

Miguel grasped the inspector's hand.

"Watson, you remember I told you of Colonel Ross, owner of the missing champion horse, Silver Blaze?" Holmes said.

Miguel nodded warily.

"I'm in charge of the case here in Dartmoor," said the inspector.

"Nice to meet you." Miguel hoped Holmes didn't expect too much out of him because he didn't have a clue as to what was going on in this book.

As the group bumped down the road in a small **carriage**, Miguel tried to gather a few facts from their conversation.

The Mystery of the Silver Blaze

- Silver Blaze, champion horse and first favorite in the Wessex Cup race, disappeared two nights ago. Owner, Colonel Ross of King's Pyland stables
- John Straker, his trainer, found beaten to death out on the **moor** the night the horse disappeared. Straker's coat found draped over a bush. Small knife found in his hand.
- Fitzroy Simpson. Arrested for the murder and horsenapping. He had been at the stables that night questioning a stable hand to get information about the horse race.
- The same stable hand was drugged. He was found passed out the next morning.

The carriage stopped. "Taking notes, Watson?" asked Holmes.

"Trying to keep up, sir," Miguel said, as he stepped out, in front of a red brick **villa**.

"Dartmoor, I presume," said Holmes.

The sun began to set, transforming the sloping plain into a golden field, and casting shadows on the faded ferns lining the low curves of the moor.

"What is that cluster of houses to the west, Colonel?" asked Holmes.

"Mapleton Stables," the colonel answered.

"Ah, your competition," Holmes said.

Colonel Ross led the men out across the moor to where the trainer's body was found. Holmes compared the **tracks** in the mud with shoes from the victim, the accused, and the missing horse.

"No tracks anywhere else," said the inspector. "I checked the grounds for one hundred yards in all directions myself."

"I'd still like to take a little walk before darkness creeps upon us," Holmes said.

"We've already alerted the **Gypsies** that live all over this moor about the handsome reward," the inspector said. "But we've heard nothing so far."

Gypsies? Miguel didn't know anything about Gypsies.

"Follow me, Watson," Holmes said. "Let's imagine what would have become of the horse if he'd broken away after the tragedy. He might have gone back to King's Pyland or to Mapleton Stables instead of running wild on the moor."

Miguel followed Holmes farther onto the darkening moor. "Could the Gypsies have taken him?" Miguel asked.

"They have no interest in a stolen horse, and wish not to be bothered by police," Holmes said. "Now, take this," Holmes said as he tossed Miguel the horseshoe he used to compare to the tracks. "For good luck."

"Imagine there are more tracks out here," Holmes said. "I'm afraid that Inspector Gregory's main weakness is that he does think too much with his imagination."

Miguel wondered if maybe Holmes suffered from an **overactive** imagination, like his sister Teresa. Holmes went off to the left, Miguel to the right. As the skies went black, a chill crawled down Miguel's spine like a spider. Owls screeched, the wind howled, someone screamed.

Imagining Tracks

Miguel froze in the ringing silence of the night. That scream—that low, deep scream still echoed through his mind. *Which way had it come from?* The moor was quieter than any place he'd ever been, and the darkness crept in more fully, leaving Miguel alone and lost. Leaves rustled to his left, and shadows stole toward him from the right. Miguel's throat tightened. "Mr. Holmes?" he squeaked. "Is that you?"

The sounds stopped cold. Miguel strained his eyes and ears, but he could hear nothing but a faint moan. *Was it human or just the wind?* Not willing to find out, Miguel shot off in the opposite direction. Sweat built up under his heavy coat. "Mr. Holmes!" he cried out. "Where are . . ."

Before he could finish, Miguel tripped into a **depression** in the moor and twisted his ankle. He cried out in pain. A light flickered off in the distance. Miguel crawled up the soft, mushy ground, his ankle throbbing. There was definitely something . . . or someone, coming. He had to get out of there!

After struggling onto flat ground, Miguel fell to his back. His ankle felt tight inside his boot. There was no way he could run, or even walk, back to the stables. He closed his eyes, afraid.

"OUCH!" Someone trounced right over his good ankle.

"Oh, sorry," a boy holding a lantern said. "What'r you doing down there, sir?"

"Twisted ankle," Miguel moaned.

"Let me help you," he said, pulling Miguel to his feet. "Why are you on the moor so late?"

The young man's dark eyes looked ***vaguely*** *familiar,* Miguel thought, before he said, "Searching for horse tracks."

"Sir?" the boy asked.

"Mr. Sherlock Holmes and I were searching for evidence that Silver Blaze might have run off the night of his trainer's murder."

"Why sir, I love horses more than anything," the boy said. "I shall be glad to assist you."

"No," Miguel said as he shook his head from side to side. He didn't need another kid hanging around like his sister. "I shall manage, as soon as I find Mr. Holmes."

"You are in no condition to be out on the moor alone at night," the boy said. "And I've got quite an imagination for such work."

"Imagination?" Miguel asked. "Have we met before?"

"One too many times," said the boy laughing. "Don't you recognize me?"

Miguel cocked his head and said, "Teresa, is that you?"

Sister Sleuth

"Teresa!" Miguel stepped back. "You're a boy!"

"So?" she said. "You're Dr. Watson, a smart man!"

"How did you get out here?"

"Same way you did."

"You found the books?"

"Thanks to you!" she laughed. "When I saw the magic happen, I opened the book to follow you. Nothing happened so I kept reading until I realized that I had to read the beginning of the story to get the words to swirl around."

"I can't believe you were spying on me!" Miguel folded his arms and sat down. These books were supposed to be only his.

"The Great Gallardo would want both of his great-grandchildren to have adventures in the books, don't you think?" Teresa said.

Miguel shrugged.

"Now get up," she insisted. "Silver Blaze's tracks have got to be out here somewhere!"

"It's too dark," Miguel said. "We'll never find them."

"Use your imagination, Dr. Watson," Teresa said. "Besides, Holmes is missing, right?"

Miguel nodded.

"If we don't hurry, they might not find Silver Blaze in time for the big race!" she said.

"How do you know the horse competes in the big race?"

"I read ahead in the story before I realized that I needed to go back for the magic to happen."

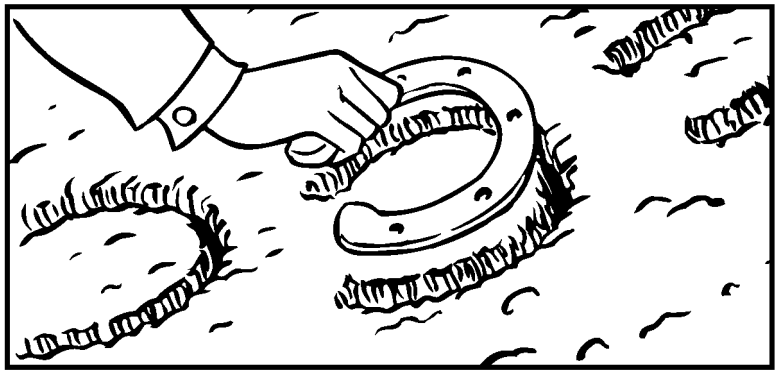
Miguel's mind raced. Maybe the magic only happened on certain pages. Looks like he had a mystery of his own to solve at home.

"Let's go!" Miguel said.

Teresa got a big branch for Miguel to use as a walking stick. Together, with the light of her lantern, they searched the moor.

Under some ferns, Teresa found horse tracks plainly outlined in the soft earth.

Miguel pulled out the horseshoe from his pocket, and it matched up perfectly to the tracks in the mud. "You did it, Teresa!"



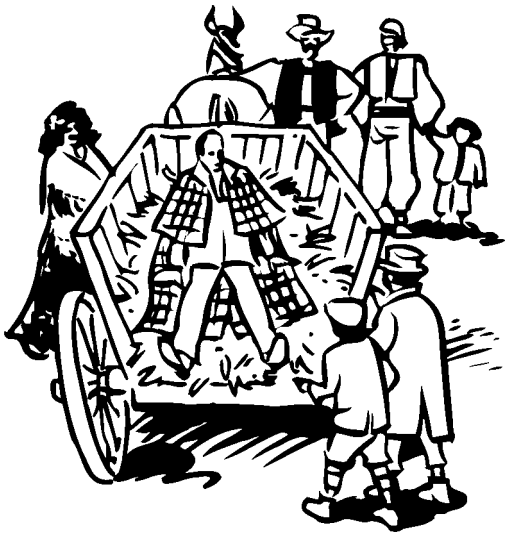
She smiled.

Branches broke behind them, and Miguel turned his head slowly to see a group of people standing around a cart pulled by a horse. Gypsies!

An older man walked toward Miguel. He held something very familiar in his hands—Sherlock Holmes' cap!

Miguel's heart raced. *Had they hurt Mr. Holmes?* He turned to grab Teresa when the man called out. "Do not fear us," he shouted. "Mr. Holmes is safe."

Miguel let out his breath and held up Teresa's lantern. There was Holmes, spread out on the cart. "My dear Watson!"



"I thought you'd disappeared," Miguel said, relieved, as he ran over to Holmes.

"No, my friend, these lovely people assisted me when I injured myself out on the moor. They agreed to take me back to King's Pyland."

Miguel looked at all the Gypsies' smiling faces. He'd been afraid for no reason at all. "Wait until you see," Miguel shouted. "We found the tracks!"

"We?" Holmes asked.

"Well, my sis . . . er . . . my friend found the tracks!" Miguel pointed to Teresa as she waved.

"I knew you could imagine the tracks. Now, let's take a **detour** and see where they lead," Holmes said as the carriage headed west, with Miguel and Teresa guiding them.

Track by track, the trail led right to Mapleton Stables! Upon arriving there, Holmes said, "It is here we will find our beloved Silver Blaze."

"The horse is here?" Miguel asked.

"Oh yes, I will discuss the matter with the owner," Holmes said. "I'm sure he'll do whatever I wish, now that we know the truth."

"The truth?"

"The owner of the horse favored second in the race found Silver Blaze on the moor. He **disguised** him and kept Silver Blaze here so he'd be out of the race," Teresa said.

"Smart boy," said Holmes pointing at Teresa, who giggled.

"Watson, you and your friend may head back to King's Pyland," said Holmes, "now that we're back on track."

Miguel and Teresa said their goodbyes and took the first carriage back to the King's Pyland stables. As the cool air brushed against Miguel's face, he closed his eyes. When he opened them, the familiar aroma of bread tickled his nose.

"We're home!" he said.

"Here we are," Teresa said. "Holmes said the story was back on track."

"But what about the rest of the case?" Miguel questioned. "Who murdered the trainer and stole the horse?"

"It's all in here, my dear Watson," said Teresa as she tossed the book to Miguel. "But how can we go into books? How does the magic work?" Teresa asked.

"I think that only certain pages are magic at certain . . ."

"Times!" Teresa finished for him.

"Yeah, we both read different pages and nothing happened. So I think . . ." Miguel opened the book to the Silver Blaze story. "The magic happened only on page 185, so if my theory is correct, then today should be . . ."

He carefully climbed down the ladder with Teresa trailing behind. Miguel snatched his mother's favorite calendar from the wall. It said in tiny italic print that today was the 185th day of the year.

"So that's how it works," Teresa said. "Pretty good detective work, Dr. Watson. Way to use your imagination to solve the case."

"Yeah, thanks." He smiled at Teresa. "You're not so bad yourself."

Solving mysteries this summer with Teresa might actually be pretty fun!

Glossary

carriage	a vehicle with wheels, often pulled by horses or other animals, to carry people (p. 9)
colleague	a person with whom another works (p. 8)
depression	a low, hollow place (p. 14)
detour	a roundabout route that usually replaces a more direct way (p. 21)
disguised	changed the looks of to hide identity (p. 21)
Gypsies	members of a group of people who migrated from India to Europe long ago and live a wandering life (p. 11)
memoirs	written accounts of personal experiences (p. 6)
moor	an area of open, wet, poor land that cannot be used for farming (p. 10)
obsessed	to have occupied the mind completely (p. 4)
overactive	active more than normal (p. 12)
tracks	marks left by something that has traveled by (p. 11)
tweed	a rough, woolen cloth often used in suits and jackets (p. 8)
vaguely	not clearly (p. 14)
villa	a large, expensive home often found in the country (p. 10)

Name _____

INSTRUCTIONS: Identify and list the important events from *Sister Sleuth and the Silver Blaze* in the *Important Event* boxes. Then use the information to create a summary in the *Summary* box.

Important Event	Important Event	Important Event	Important Event

Summary

_____

_____

_____

_____

_____

_____

_____

_____

_____

SISTER SLEUTH AND THE SILVER BLAZE • LEVEL V • 1

SKILL: SUMMARIZE

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Name _____

Reading a-z

INSTRUCTIONS: Identify the sentences below that are compound sentences by writing *C* on the line. Write *NC* on the line for sentences that are not compound sentences. Circle the conjunction in each compound sentence.

C 1. Everyone was busy, so Miguel knew no one would notice him leave.

_____ 2. To make it worse, his seven-year-old sister was driving him crazy!

_____ 3. The sun began to set, and it cast shadows on the moor.

_____ 4. Miguel glanced down at himself, dressed in a gray suit.

_____ 5. The inspector said there were no tracks around, but Holmes thought otherwise.

_____ 6. Miguel needed to search for clues, or the case might not be solved.

_____ 7. Miguel tripped and twisted his ankle.

_____ 8. The Gypsies knew of the reward, yet no one had come forward.

_____ 9. Owls screeched, the wind howled, and someone screamed.

_____ 10. The horse might have gone to King's Pyland or Mapleton Stables.

SISTER SLEUTH AND THE SILVER BLAZE • LEVEL V • 2

SKILL: COMPOUND SENTENCES

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Name _____

Reading a-z

INSTRUCTIONS: Use a thesaurus to choose a *synonym* and an *antonym* for each word in the first column. Write each word in the appropriate space on the chart. Then write a sentence using either the synonym or antonym.

Words	Synonym	Antonym	Sentence
stop			
cold			
found			
small			
dark			

SISTER SLEUTH AND THE SILVER BLAZE • LEVEL V • 3

SKILL: SYNONYMS AND ANTONYMS

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Word Smith, Private I

A Reading A–Z Level V Leveled Reader
Word Count: 2,089

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Word Smith, Private I

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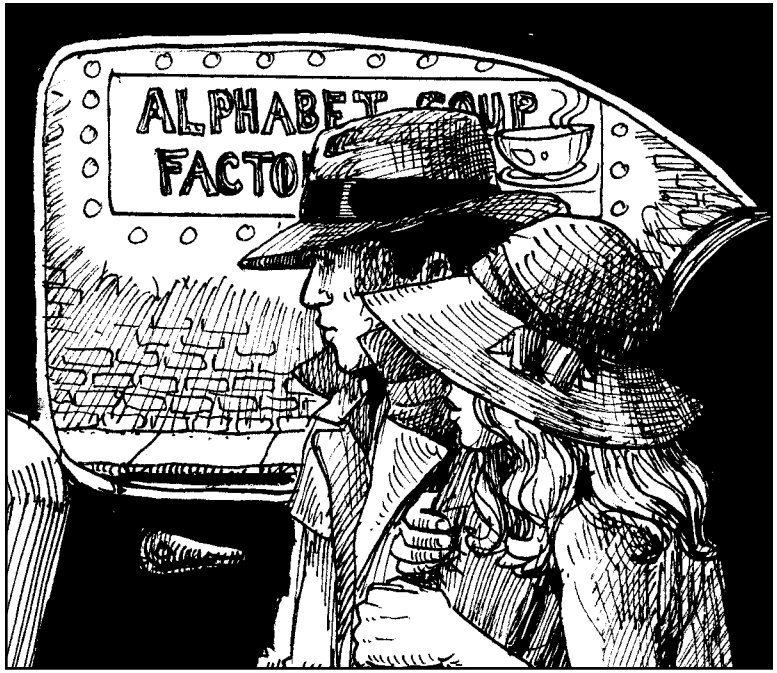
Word Smith, Private I



By Word Smith, as told to Blane Jeffries
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Anagrams and Palindromes

As I sat in my office penning the daily newspaper crossword puzzle, slits of light leaked through the Venetian blinds and onto my desk. Then, suddenly, she walked in, dressed to the nines with all her i's dotted and t's crossed.

"Are you Word Smith, the famous Private I?" she asked.

"That depends," I asked back, "on who's asking."

"My name is Hannah Eve Hannah. Maybe you've heard of me?"

Hannah Eve Hannah is the **heiress** of the alphabet soup fortune. I tried to remain calm.

"Maybe I have," I said coolly, peering back at my crossword. "Ten down: 'Mix up the letters to make a new word,' seven letters starting with an 'a.'"

"Easy," she said, "**anagram**."

"And that's 'a yes,'" I said.

"Which is an anagram of 'easy,'" she said. I could tell she was my kind of person—a wordplay person.

"Hannah, did you know that your name is a **palindrome**, the same word backward and forward?"

"I know that," she replied, "but if you know that, then you must be Word Smith, the private detective, specializing in cases that have to do with parts of speech, punctuation, and language. Am I right?"

She had me pegged like a wooden hatrack, nailed like a post to a fence, cornered like a . . . like a . . . I couldn't come up with another **simile**, so until I did, I figured I might as well take the case.

"What is it you need me to do? Find a misplaced modifier? Rescue a dangling participle? Subordinate a clause?"

"Nothing that simple, word-boy. I need you to decipher the meaning of these notes, which came wrapped around a brick thrown through a window in Daddy's factory."

She handed me three slips of paper, each one with a separate message: "Never odd or even," "Runs a treat," and "Live evil."

"'Live evil' is a palindrome," I said, "and the calling card of a master criminal, the PUNisher." My old foe was loose again.

"'Never odd or even' is another palindrome, but also a riddle—what number is 'never odd or even'?" I was drawing a blank, coming up empty, getting nothing, zip, zilch, zero—that was it—zero, zero is neither odd nor even, yet, I doubt zero could be the answer. Why? The PUNisher never gives a straight answer, so it had to be a clue—and to think that fiend used to be a friend of mine, until he stole the "r."

"Another way to say 'zero' is 'goose egg,' right? That must be what we're looking for, but where?"

"A farm?" suggested Hannah. "A pond?"

"Too literal—check the other note."

"'Runs a treat'?" she read aloud.

"Anagram it," I said. "Using the same letters, what type of place 'runs a treat'?"

For a while we scratched our heads, contemplating, then Hannah said, "Restaurant!"

"Nice going, kid, eggs-actly."

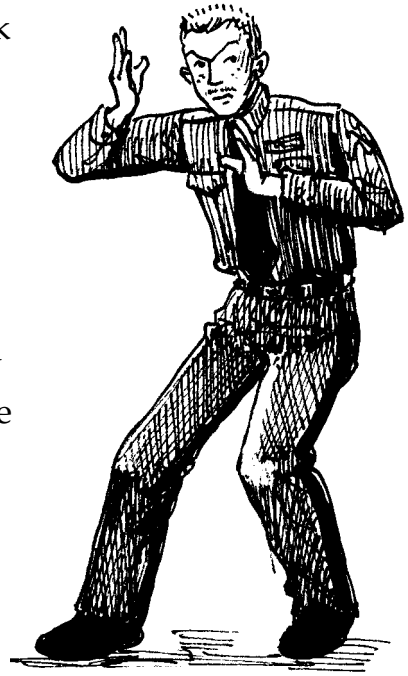
But what restaurant would serve a goose egg? A fowl place for sure. (Sorry.) We checked the Internet for poultry joints in the area: "Chicken Little," nah, "The Hen Pen," nope, "You Turkey," no—but I did like their slogan, "Where it's Thanksgiving 365 days a year."

"The Dead Duck." We were getting closer. "Your Goose Is Cooked," that was it!

Hinky Pinky

On the way to the restaurant, I thought back about my days on the force—our days—the PUNisher and I were rookies together on the grammar patrol. We worked the streets, cleaning up people's speech and fixing their spelling errors. Yeah, it was a tough job, but someone had to do it. Imagine a world where people put "i" before "e" even after "c"—there would be chaos!

The PUNisher, then known as Webster White, got mad when people told him to buzz off for correcting their **syntax**. He thought they should thank him and invite him over for a game of Scrabble®, but you can't go into this line of work looking to make friends, you know what I mean? Webster took it personally and wanted revenge. Since he felt unappreciated, he left the force to do the job on his own, his own way, even if it was against the rules of grammar.



Unfortunately, on the way to the restaurant, I got lost in thought: if the plural of mouse is mice, why isn't the plural of house 'hice' and if more than one man is 'men,' why isn't more than one pan 'pen?'

By the time we arrived at the restaurant, the PUNisher had vanished. I was correct, he had been there, and I confirmed this by interviewing his waiter, Otto. "A short time ago, faster than you can say 'a salami sandwich on rye, hold the mayo,' did you serve a man a goose egg?"

"Yes—and it was nothing, bada-bing," he said, sounding suspiciously like a third-rate stand-up comedian.

"Did he order anything else?"

"A jumbo hot dog that I know he took a mighty great pleasure in consuming."

"How do you know that?" asked Hannah. That was a mistake. Being a Private I, I could see—and hear—the painful **pun** coming.

"Well," twitched Otto, holding back a smile, "he ate it with relish."

"Oh," groaned Hannah in horror, "that was a brutally bad joke."

"Speaking of bad jokes," said Otto, "what do you call a rabbit that tells jokes?"

"A funny bunny," I said.

"What do you call a dog that falls into a pool?"

"A soggy doggy."

"What do you call a squashed feline?"

"A flat cat."

"Stop it," cried Hannah, "I can't take any more!"

These terrible jokes with rhyming punch lines are called Hinky Pinkys. As a wordplay pro, I knew that in the wrong hands, they could be deadly. Then it dawned on me, like the East Coast at six in the morning—the PUNisher had somehow turned Otto into a bad-joke-telling zombie! Consequently, an army of zombie jokers would make life miserable for everyone else with their nonstop punning and painful wordplaying. The English language would be destroyed!

My only hope was to get Otto out of this trance. So like any noble detective would do, I tied him tightly to a chair—but not before he got in a few more shots.

"That suits me, said the tailor."

"Ouch!" cried Hannah.

"That's shocking, said the electrician."

"Yikes!" she shrieked.

"Help, piped up the plumber, from under the sink."

"Please make him stop, Word!"

I thought of gagging Otto, but once the gag was removed he'd starting gagging it up again. Therefore, my only hope was to tie up his tongue along with the rest of his body.

"Repeat after me," I said to the waiter, "five times fast."

"Five times fast," he said.

"No, quickly repeat what I'm about to say five times, you nitwit."

"Okay."

"She sells seashells by the seashore."

It was a tough tongue twister, and I know I was taking a risk having him say it, yet I concluded that all that blubbering similar **consonant** sounds would either knock some sense into him, or knock him senseless.

"She sells seashells by the seashore, she sells seashells by the she saw, she shells seesaws . . ." and that's when he blanked out.

Who's That Knock-Knocking at My Door?

"Knock, knock," I said, knocking gently on Otto's noggin before he awoke, groggy and blurry-eyed.

"Who's there?"

"Word Smith," I said.

"Word Smith? Who?"

"Word Smith, Private I."

Technically, that wasn't a knock-knock joke, but I wasn't trying to be funny—or unfunny.

"Never heard of him," Otto said. "Now if you'll excuse me, I have a job to do."

"Torture innocent people with painfully bad jokes?" said Hannah.

"No, wait on customers."

So my tongue twister had done the job. The waiter was no longer under the PUNisher's spell, but we still had to uncover what that **fink** was up to—and to think that rat used to rate grammar with me, until he stole the "e."

"Did your last customer leave you a tip?" I asked Otto.

"No," Otto said, "but here's his tip: 'Don't talk to strangers with your mouth full.' Then he continued: 'Today is a **red-letter** day, and by tomorrow, all the letters that are read will be mine.'"

Red letters? Letters that are read? What could that mean?

"I've got it," said Hannah, "the PUNisher's going to steal all the letters from Daddy's alphabet soup factory."

That was it: if the PUNisher had control of all the letters, he could control all the words and with that, the entire English language; proper spelling, proper punctuation, and proper grammar would be strictly enforced—anyone caught breaking the rules would be sentenced to hard labor, **splitting infinitives**.

"To the alphabet soup factory in a jiffy!" I declared, yet we couldn't find a jiffy, so we flagged down a taxi.

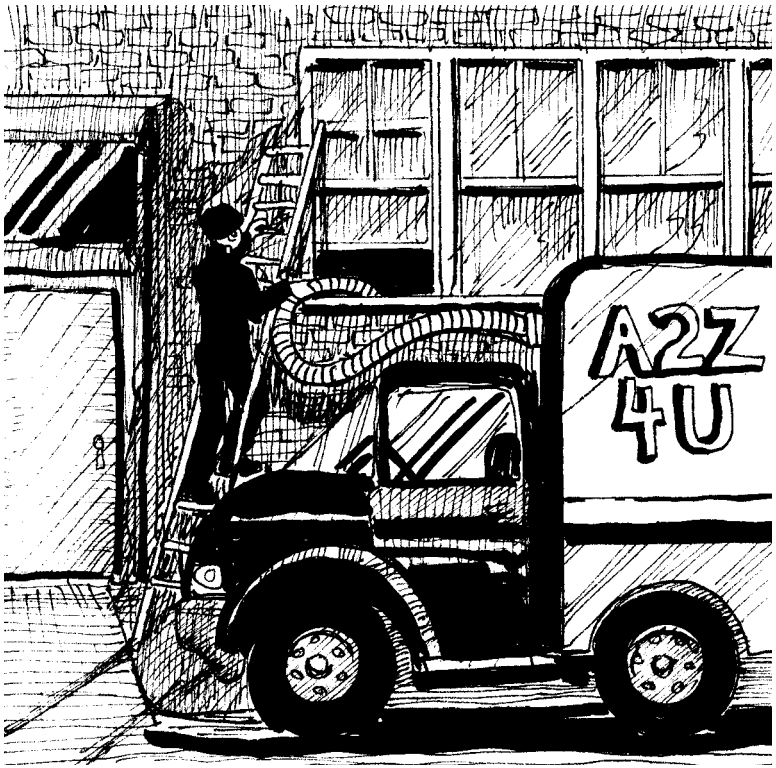
Puns of Fun

We arrived at the factory just as the PUNisher was vacuuming up the last "Z" into a gigantic truck marked "A 2 Z 4 U," proving that Hannah was right: he was stealing all the letters.

"Webster," I said, "stop!"

"That's 'pots' backwards, or you can anagram the letters to make 'tops' or 'spot.'"

Same old Webster, I thought.



"I would have thought a flashy Private I could come up with a more difficult word for me to anagram like 'halt' or 'desist.' You're losing your touch with words, Word."

"Hardly, old friend, give me your best pot-shot."

The PUNisher fired up his pun-gun. "What do mummies dance to?"

"Wrap music."

"What does a clock do when it's hungry?"

"Go back four seconds."

"What's a barber's motto?"

"Hair today, gone tomorrow."

"Okay, so you're still a punny guy, but I'm the one with all the letters, and soon, I'll make sure all the rules are followed, period, exclamation point!"

"You're the one who has lost it, Webster. You're such a stickler for proper speech that you have forgotten how to have fun with **phonics**, play with pronouns, laugh at language."

"Ha! My puns put the 'ugh' in laugh—I can beat you at any wordplay game, Wordy, so name your weapon."

"All right, we'll spin spoonerisms: I'll say a phrase, and you'll have to switch the initial sounds of some of the words to make a new phrase."

"That's easy, or shall I say, hat's teasy."

"Word, be careful," cried Hannah. "He's good."

I knew he was good, but I was better—or worse, at least from the point of view of wordplay, where silly and stupid trump straight and narrow. "Here goes: 'Know your blows because nicking your pose means you have very mad banners.'"

"Don't you mean: 'Blow your nose because picking your nose means you have very bad manners.'"

Round one, the PUNisher. Now it was his turn to try to stump me. "His and lear. It's time to send the mails of our cattle chips and bruisers."

"Don't you mean: 'Listen hear. It's time to mend the sails of our battle ships and cruisers.'"

"Well done, Word, go again."

"Wait," interrupted Hannah, "you two are too evenly matched—we'll be fear however, I mean here forever—let's decide this dispute with one ultimate riddle. If the PUNisher answers correctly, he gets the letters and dominates the dictionary, but if Word is right, the letters stay, and the PUNisher makes like a tree and leaves."

"A riddle? I invented riddles," laughed the PUNisher. "You're on."

"Hannah, he's the wizard of riddles."

"But you have the gift of illogical logic, Word." Then she gave me a hug, and I took it.

"You two have ten seconds," said Hannah, "so tell me: 'Two wrongs don't make a right, but three of these, do.'"

This was new for me, but it reminded me of my daily crossword puzzles—I stole a look at the PUNisher and spied a cocky smirk on his face.

"Seven seconds."

I got lost in thought again, walking one way, then another, then another.

"Three seconds."

Then it struck me like a clock at midnight. I snagged another glimpse at the PUNisher to see if he knew the answer. He hadn't moved. However, the smirk on his face had vanished.

"Time's up," called Hannah, "two wrongs don't make a right, but three of these do."

"Uhm," said the PUNisher meekly, "three wrongs?"

"No," I said coolly, "it's three left turns. See, I turned left, then left, and left again, and suddenly I was facing in the right direction."

"Absolutely right," cried Hannah and added an "e" to the hug to make it huge. We won! The letters were ours.

"I'll be back!" yelled the PUNisher, who left in a huff—then again, it might have been a minute and a huff; we were hugging for quite a while.

Glossary

anagram	a word or phrase created by reordering the letters of another word or phrase (p. 5)
consonant	a letter that is not a vowel (p. 14)
fink	slang for a mean person (p. 16)
heiress	a woman who will receive money from her parents when they die (p. 5)
palindrome	a word spelled the same way backwards and forwards (p. 5)
phonics	matching sounds with letters (p. 20)
pun	a play on words (p. 11)
red-letter	very special or important (p. 16)
simile	a comparison of two things using "like" or "as" (p. 5)
splitting infinitives	to break up verbs (in their base form) with adverbs; example: *to boldly go* instead of *to go boldly* (p. 17)
syntax	rules of grammar about the correct order of words in sentences (p. 9)

Name _____

Instructions: Write a prediction in the *Make* column. Revise the prediction as you read in the *Revise* column, and write a check mark in the *Confirm* column if you can confirm your prediction after reading. Record the events that actually happen in the *Actual* column.

Make	Revise	Confirm	Actual

WORD SMITH, PRIVATE I • LEVEL V • 1

SKILL: PREDICTION

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Name _____

Instructions: As you read, think about the author's purpose(s) for writing *Word Smith, Private I*, and then check the appropriate box(es). Write examples from the text to support your thinking in the *Evidence* column.

☐ **To Inform**	**Evidence:**
☐ **To Entertain**	**Evidence:**
☐ **To Persuade**	**Evidence:**

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Name _____

Reading a-z

Instructions: Read each sentence. Choose two words from the box that create a hyphenated compound adjective that completes the sentence. Write the new word in the blank space and underline the noun that each adjective describes.

~~blurry~~	stand	joke	knock	third	knock
up	rate	night	telling	~~eyed~~	late

1. His blurry-eyed expression told us he was sleepy.
2. The PUNisher had made him into a bad _____ comedian.
3. The _____ comedian's jokes were not funny.
4. Otto was turned into a _____ zombie!
5. The PUNisher made a _____ visit to the alphabet soup factory.
6. They told a _____ joke.

WORD SMITH, PRIVATE I • LEVEL V • 3

SKILL: COMPOUND ADJECTIVES

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Name _____

Instructions: Read the sentences below and decide which ones contain a simile. (Remember, a simile is a comparison that uses the word *like* or *as*.) Below each simile, write which two things are compared. If the sentence does not contain a simile, write *no simile*. Then write two similes that describe something or someone.

1. Hannah Eve Hannah was dressed as neat as a pin.

_____

2. As a grammar detective, Word Smith was great with language.

_____

3. Solving crimes of grammar made Word Smith as happy as a clam.

_____

4. The PUNisher disappeared like a ghost.

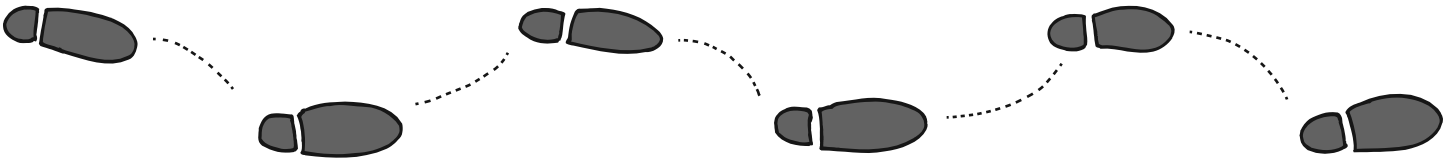
_____

5. Listening to his puns was like having a bad toothache.

_____

6. The riddles reminded Word Smith of the daily crossword puzzles.

_____



1. Simile #1

_____

_____

2. Simile #2

_____

_____

WORD SMITH, PRIVATE I • LEVEL V • 4

SKILL: SIMILES

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Yosemite and the Badge

A Reading A–Z Level V Leveled Reader
Word Count: 1,856

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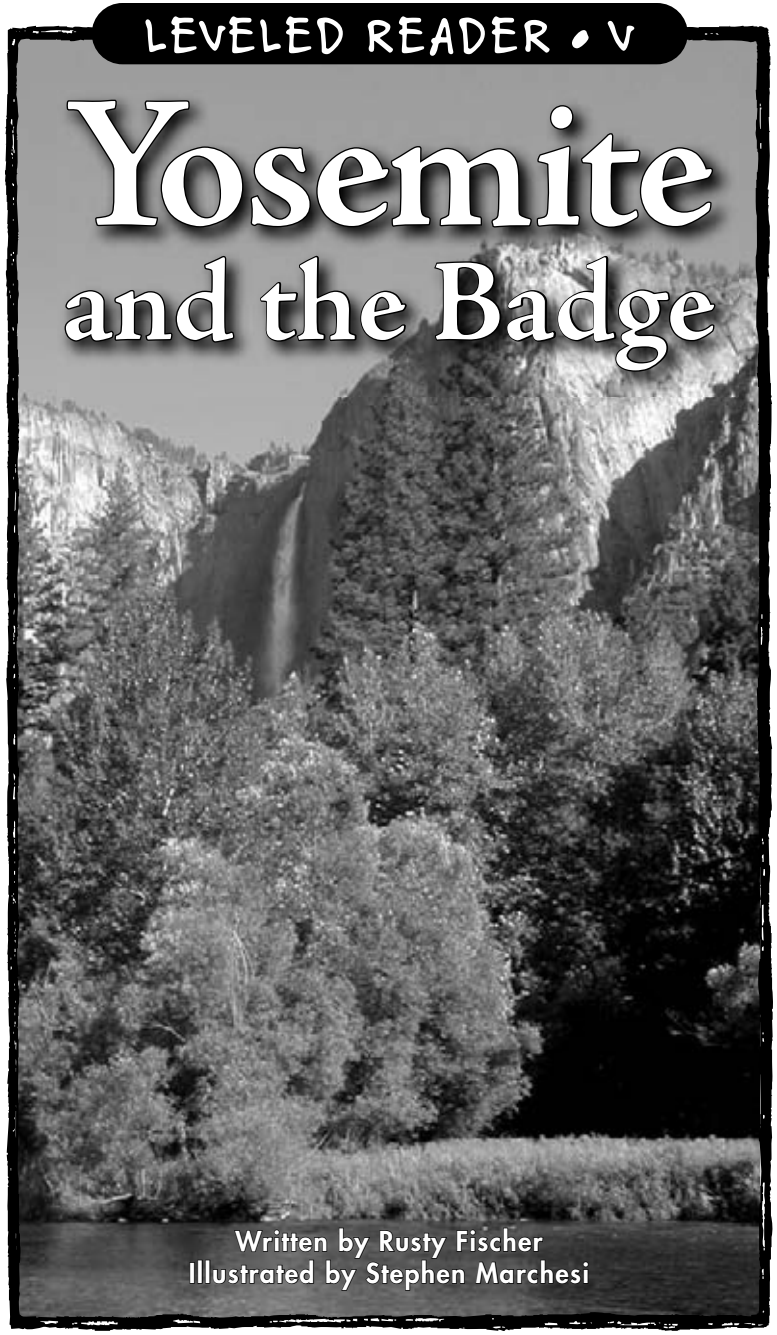

Written by Rusty Fischer
Illustrated by Stephen Marchesi

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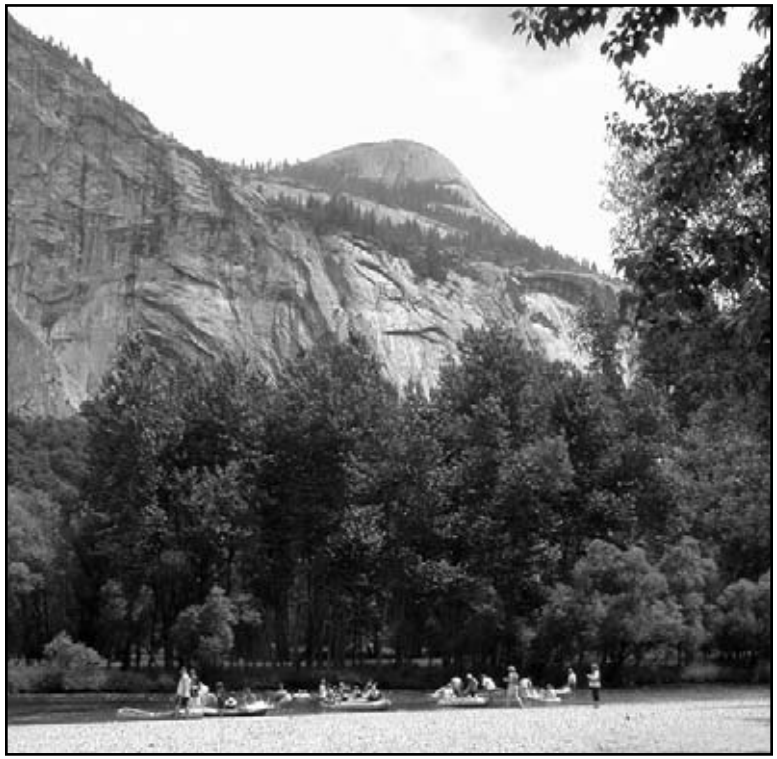

Written by Rusty Fischer
Illustrated by Stephen Marchesi

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Front cover: Merced River (foreground), Upper Yosemite Falls (background)
Title page: Rafters on the Merced River beach near Housekeeping Camp

Yosemite and the Badge
Level V Leveled Reader
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Correlation

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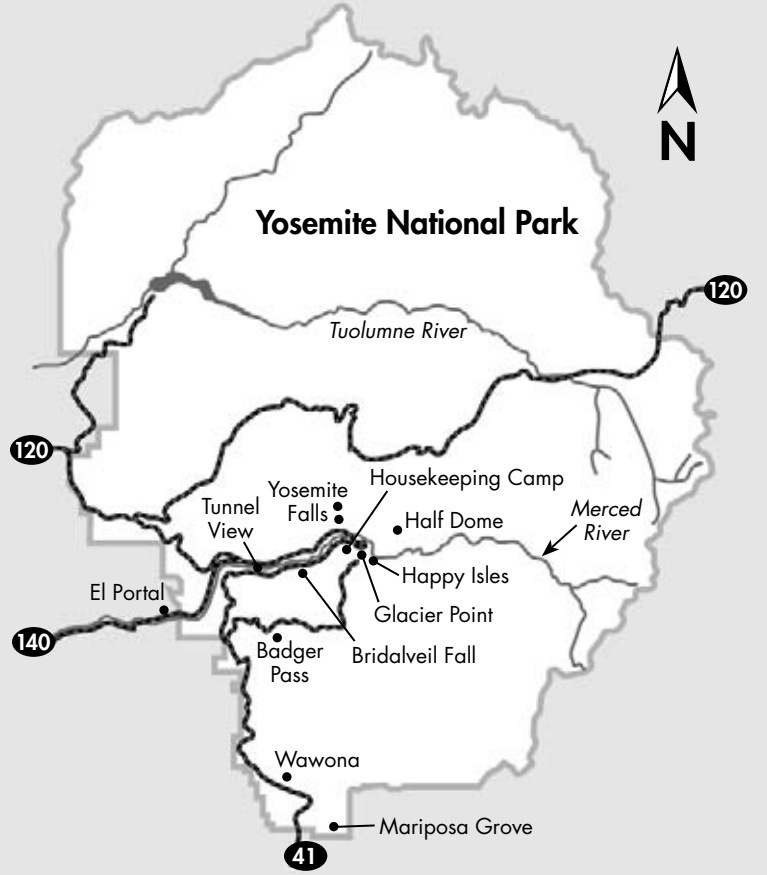

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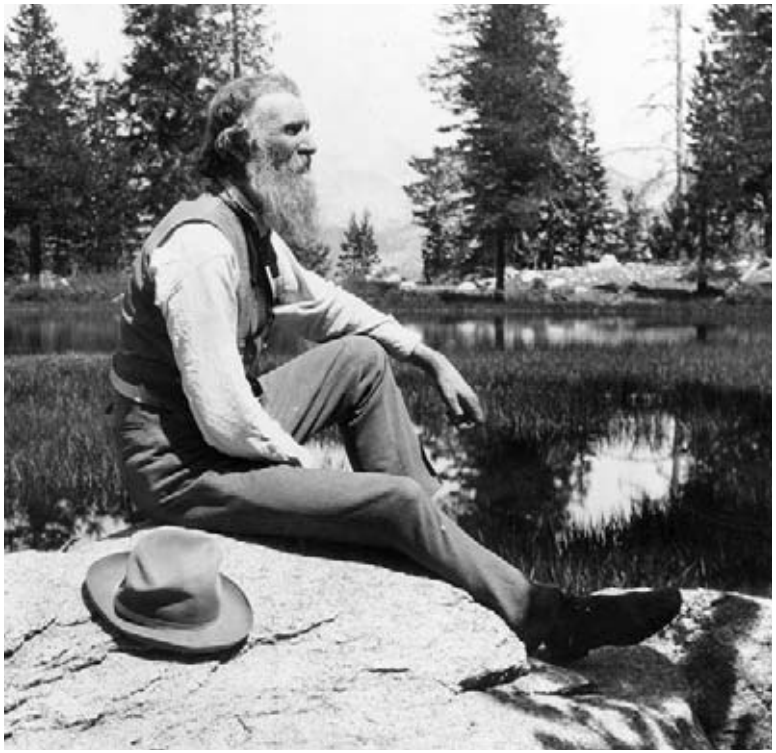
Bookstore Treasure

I watched Nana wind through the busy city streets with her favorite scarf wrapped tight. Her face was stern as she moved through the crowds of people with a book in her hand. Then she saw me, looking through the window down at her, and smiled. It turned out the book was for me. It was a Junior Ranger Handbook for Yosemite National Park, and before dinner I was halfway through it!

Although Nana hated bugs and trees and bushes and bears, she knew I loved the outdoors, and it meant a lot that she would find a book just for me.

After I finished the book, I put it on my shelf next to some other books by my favorite author, John Muir, the famous **conservationist** and **naturalist**. He did so much to conserve nature that some people call him the father of our national park system.

That night I could barely sleep. The activities in the Junior Ranger book kept running through my mind. It said that the more activities I did, the closer I would be to earning the official Junior Ranger badge. I wanted that badge. I thought how proud John Muir might have been to know that a kid could help preserve Yosemite years after he had written about the need for people to preserve it.



John Muir, a naturalist, geologist, and more, argued in the late 1800s that the natural beauty of Yosemite must be saved for future generations to see.

The next morning, I woke up early, pulled the new book off the shelf, and started to do the activities.

First, I did the word find; then, I drew a "Save the Bears" poster, which I presented to Nana. She smiled and said, "That's nice."

Then I asked her, "Nana, I really want the Junior Ranger badge, but to get it I have to go to Yosemite National Park and complete some more activities. Will you take me?"

Nana shook her head. "You know how I hate the outdoors."

Then I think she saw the look of disappointment on my face because she said, "Well, you do have a birthday coming up. I was going to get you that stereo you wanted but, I guess if we watched our pennies and camped out, a trip to Yosemite wouldn't cost much more."

That weekend, Nana and I packed the car with a cooler of drinks and food, sleeping bags, pillows, and blankets. Although Nana was a real trooper about it all, I knew she would rather stay in a hotel than go camping.

Lightning strikes in and around Yosemite in June 2004 caused nine fires in the park.

Over the River

About an hour before we arrived at the park, we had to take a long detour because of a fire on a hill. There was a lot of smoke, and I saw a helicopter drop water on the fire.

Finally, we drove into Yosemite National Park. Nana smirked as we wound through, admiring the **fauna** and the lush, green natural surroundings. "Maybe this trip won't be so bad after all," she said—though the frown on her face told a different story.

At Housekeeping Camp, we stopped at the ranger's office to pick out our campsite. I think Nana was getting into the trip because she asked more questions than I did. Eventually, a ranger showed us where our campsite was located on a map—beside Merced River. Despite her grumbling, Nana seemed pleased to have a view of a rushing river nearby. Our site was beautiful and the sound of water—a sound I never heard back in the city—was so close I could almost touch it. I wondered if it was the same view John Muir might have had years before.

Nana especially liked that we had a tent cabin rather than a plain tent and that we didn't have to sleep on the ground. Instead, the cabin had a bunk bed.

Nana and I built a campfire using some small kindling and newspaper she had brought along. We roasted hot dogs and covered them in mustard, and for dessert, we roasted marshmallows.

After dinner, Nana and I sat by the fire, planning the next day. I told her that I needed to get started on earning my Junior Ranger badge. Now that she was here, I think Nana wanted to help **preserve** Yosemite as much as I did!

The next morning, I looked through my Junior Ranger Handbook as Nana stretched what she called her "aching feet." I thought it was pretty funny, since she walked miles every day in the city, but suddenly setting up camp and sleeping on a bunk bed had her feeling grouchy and sore.

As for myself, I needed to complete five activities to earn my badge, but the good news was that the word find and bear poster I did at home—luckily I'd brought them along—counted. That left only three more activities, and the badge would be mine!

Through the Woods

I asked Nana if she would help me, and she said she would. I hoped it would take her mind off her complaining.

Together we looked at the list of programs being offered in the daily camp newsletter, *Yosemite Today*. We found a Junior Ranger program being offered at 3:00 that afternoon at Happy Isles Nature Center.

With that settled, Nana helped me make a checklist: Word count? Check. Bear poster? Check. Happy Isles? Check. That left only two activities to do! I wasn't too worried about running out of choices because there were 14 activities listed in the handbook.

As Nana and I considered our many options, I wondered what John Muir might have picked because several of them seemed to be his specialty. Luckily, they looked like things I might be interested in doing as well.

This giant sequoia, called the Wawona Tunnel Tree, had a path cut 8 feet wide and 26 feet long for visitors to travel through.

Activity 7 was about the **giant sequoias**, which were by the Wawona Hotel, a place Nana wanted to visit. Activity 9 was about the Ah-wah-nee-chee Indians. That activity looked promising. For one thing, the Indian Village of Ahwahnee was very close to where we were camping, and for another thing, I'd always been interested in **Native Americans** and how they lived. The real clincher was that Nana seemed eager to tag along. After shaking hands on it, Nana and I decided we would begin by going there.

A building from the Indian village of Ahwahnee

We went to the Indian Village and took the self-guided tour. We learned a lot as we walked from displays to **replica** buildings.

The Indians called their valley Ahwahnee, which means "valley with the gaping mouth" and called themselves the Ah-wah-nee-chee, which means "dwellers in Ahwahnee."

During the cold winters, the Ah-wah-nee-chee traveled to the foothills where the climate was milder. In the spring, they returned to the **High Sierra** and Yosemite.

They found food that included leaves, stems, seeds, bulbs, and berries. Black oak acorns also made up a big part of their diet.

"I guess they didn't have fast food and pizza," I said as we learned more about their diet.

"No," Nana agreed, "but they sure had the right idea. I bet they had a lot less problems with their health than your old Nana does!"

After we finished the tour, Nana and I looked at my handbook again—only two activities to do before I got my badge!

We took the shuttle to Happy Isles Nature Center, where there were four trails teaching about the area's four different environments: forest, river, talus, and **fen**.

A park ranger took us on the talus trail. We had no idea what "talus" was but soon found out that talus is made up of the rocks that pile up at the bottom of a cliff from rock falls.

Rock falls are often caused by roots that can grow through the cracks in rocks and cause them to break loose.

Earthquakes, rainstorms, and snowmelt also can cause rocks to split and tumble down mountainsides.

Wow! So many natural forces are responsible for changing Earth's surface.

The Wawona Hotel has been helping guests in Yosemite since the late 1870s.

To Grandmother's Hotel We Go

That evening, since Nana had been such a great sport, we decided to pack up our campsite and spend a night at the Wawona Hotel.

Not only would Nana get a good night sleep and not wake up so cranky, we would be closer to the giant sequoias in the morning.

It was tough to leave the peaceful water, but the hotel turned out to be equally stunning. There were six white buildings with wide porches and **verandas** with vines growing on them and a fountain of flowing water in the center of the courtyard. It was quite a contrast to where we stayed the night before.

After breakfast, we packed the car and headed to the Mariposa Grove of Big Trees. Once there, I would complete my last activity by wandering among the giant sequoias.

We took the shuttle to the Mariposa Grove, and from there, we took the tram ride to see and hear about the "Big Trees."

The Ah-wah-nee-chee's word for big trees was "Wah-wo-nah." We learned that there are almost 500 giant sequoias and some of them have been alive for almost 2,000 years.

The tram stopped at the Grizzly Giant, which is estimated to be about 1,800 years old, just over 200 feet tall, and has a trunk with a diameter nearly 30 feet.

It was so amazing to look up, ant-like, at the base of these towering, magnificent trees. Even Nana couldn't help but gaze, ever upward, as the trees disappeared into the hazy thick clouds above.

On the way out of Yosemite, I handed my book to a Ranger so that she could sign-off on the activities I completed. She, in turn, handed me a trash bag. She said that my last task was to collect a bag of trash because rangers always leave a place better than they had found it.

After a short time, picking up the candy and gum wrappers that tourists sadly leave behind, I returned to the Ranger's station.

She thanked me and then had me recite the Junior Ranger **oath**.

The Patch, One of Many

I said proudly, "As a Yosemite Junior Ranger, I promise to do all that I can to help protect the animals, birds, trees, flowers and other living things, the scenery, and the other special qualities and places in Yosemite National Park. I will continue to learn about the nature and the history of the park even after I leave Yosemite."

The park ranger signed my handbook and handed me my first Junior Ranger patch. The patch was so cool—brown and shaped like an arrowhead with a big bear paw right underneath the words "Junior Ranger Yosemite." I was so proud, and Nana gave me a big smile.

During the long drive back through Yosemite National Park, Nana and I stopped many more times to take photos. We were both sad to leave, even Nana, but to cheer me up Nana handed me a long list of national parks where I could earn more Junior Ranger patches. She said I needed to decide where we—that's right, "we"—could drive next summer and then to circle the ones I wanted to visit. There are so many. How will I ever choose? I asked Nana to help, and she was more than happy to do so. I think she has finally gotten over the fear of the outdoors. John Muir would be proud of both of us.

Cathedral Rocks (center) loom over Yosemite Valley. Visitors in 1902 (right) and Theodore Roosevelt and John Muir in 1906 (left) stand on Glacier Point.

Glossary

conservationist	one who works to protect the environment (p. 5)
fauna	animals of a particular region (p. 9)
fen	a low, flat, swampy area (p. 17)
giant sequoias	very tall evergreen trees with massive trunks that are usually reddish in color (p. 14)
High Sierra	a region in Yosemite that includes the Sierra Nevada mountain range (p. 15)
Native Americans	people who lived in the Americas before Europeans arrived, sometimes called "Indians" (p. 14)
naturalist	someone who studies nature and the history of nature (p. 5)
oath	a formal promise (p. 21)
preserve	to maintain or keep in an unchanged condition (p. 11)
replica	a copy or reproduction of something (p. 15)
verandas	large porches attached to buildings (p. 19)

Name _____

Instructions: Draw a picture for each part of the story where you stopped to visualize in order to understand what you read. Then write a description to explain each picture.

YOSEMITE AND THE BADGE • LEVEL V • 1

SKILL: VISUALIZE

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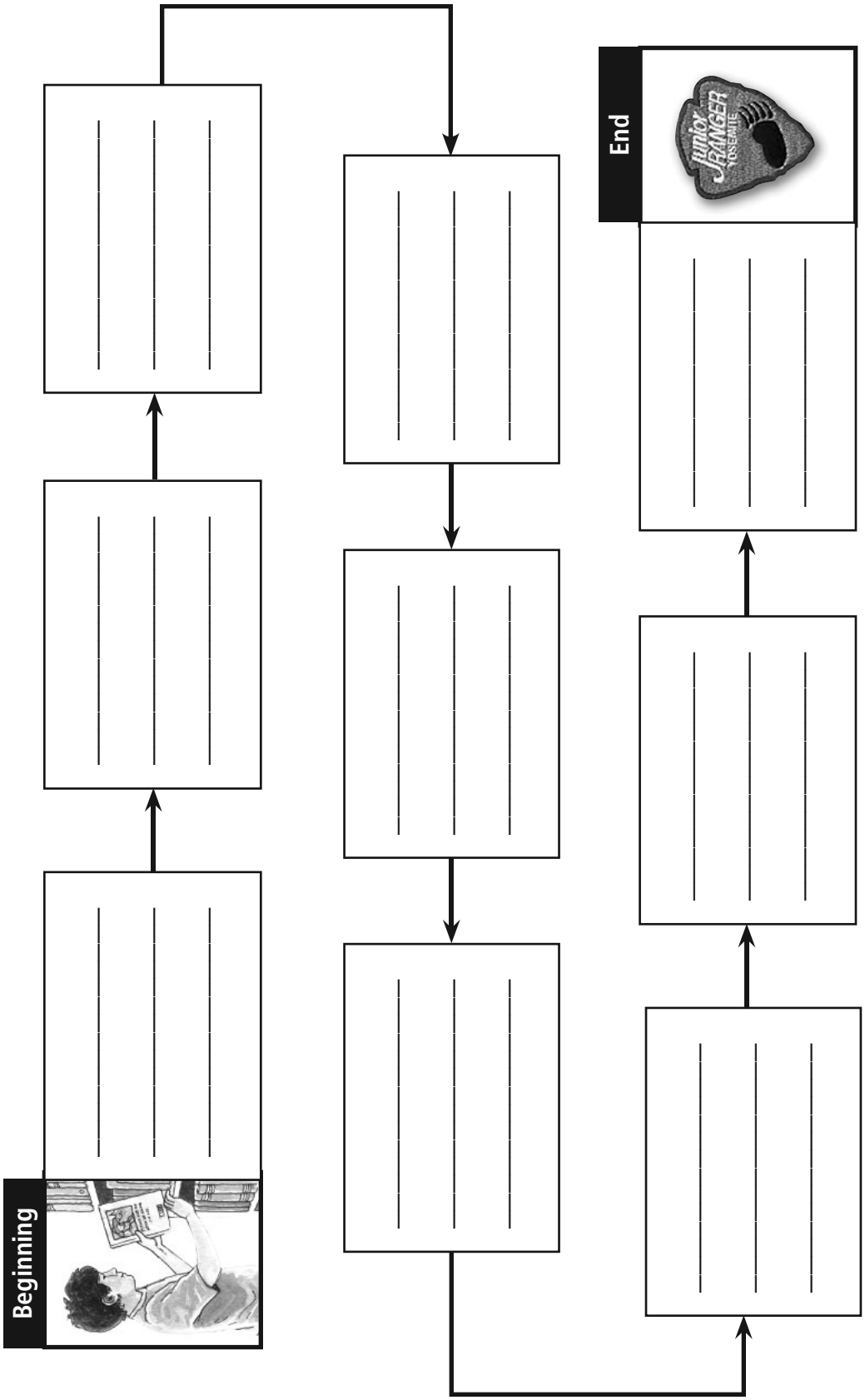
Name _____

Reading a-z

Instructions: Write what happened in the book in the order in which it happened.

Book Title: _____



YOSEMITE AND THE BADGE • LEVEL V • 2

SKILL: SEQUENCE EVENTS

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Name _____

Instructions: Identify the sentences below that are compound sentences by writing *C* on the line to the left. (Leave the line blank if the sentence is not compound.) Circle the conjunction that separates each simple sentence.

_____ 1. It was a Junior Ranger Handbook for Yosemite National Park, and before dinner I was halfway through it!

_____ 2. She knew I loved the outdoors, and it meant a lot that she would find a book just for me.

_____ 3. After I finished the book, I put it on my shelf next to some other books by my favorite author, John Muir.

_____ 4. It said that the more activities I did, the closer I would be to earning the official Junior Ranger badge.

_____ 5. There was a lot of smoke, and I saw a helicopter drop water on the fire.

_____ 6. Nana and I packed the car with a cooler of drinks and food, sleeping bags, pillows, and blankets.

_____ 7. After shaking hands on it, Nana and I decided we would begin by going there.

_____ 8. I was so proud, and Nana gave me a big smile.

Lightning strikes in and around Yosemite in June 2004 caused nine fires in the park.

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Name _____

Instructions: Use the dictionary to identify the definition of each word in the homophone pair. Write the definition on the line under the heading *Definition*. Then use the definitions to write one sentence that includes both words in the homophone pair. You may add suffixes such as *-ed*, *-s*, or *-ing* to the homophones to make them work in the sentence.

Word	Definition	Sentence
here	the place where you are at	I come here to hear the chorus sing.
hear	to listen to someone or something	
real		
reel		
soar		
sore		
threw		
through		
wear		
where		

YOSEMITE AND THE BADGE • LEVEL V • 4

SKILL: HOMOPHONES

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In the Name of Discovery

A Reading A–Z Level V Leveled Reader
Word Count: 2,622

Reading a-z

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LEVELED READER • V

In the Name of Discovery

Written by Lori Polydoros
Illustrated by David Cockcroft

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In the Name of Discovery

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Note: The Great Gallardo's Books is a continuing series written by Lori Polydoros. Travel with Miguel Ventura and his friends as they experience a classic adventure inspired by Jules Verne's *Journey to the Center of the Earth*.

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An Explorer's Life

A Spanish fleet sailed across the page in Miguel's social studies book.

"Gold, power, glory," Miguel's friend, Trevon, exclaimed, "those explorers really had it all!"

"Sailing to unknown lands, seeing new things, adventure around every corner . . . boys!" Lily exclaimed.

"Yeah, we love an adventure!" said Trevon.

Miguel couldn't argue with the idea that exploring the world five hundred years ago could have been exciting. That's what he'd realized after studying some of the famous explorers such as Sir Francis Drake, "The Dragon," a feared **privateer**, navigator, and seaman. Drake was one of the first Englishmen to sail all the way around the world, and was best known for plundering the Spanish colonies in the New World in search of treasure.

"I wonder what it was like?" Miguel asked.

"What do you mean?" Trevon said. "It must have been totally awesome!"

"What do YOU mean? It had to have been scary!" Lily added.

Miguel imagined himself at the helm of a huge ship, leading an **armada** across the open sea. Gold coins would burst from his pockets while men surrounded him, acting upon his every command. In his mind, Miguel stood taller than ever. It made his real life feel as boring as watching paint dry.

"Yeah, it must have been totally exciting," Miguel said dreamily as he stood up and walked to the window. "But you do know that most of what they did was totally dishonest and cruel, right? A lot of innocent people were killed. Entire villages were destroyed just so these explorers could go home wealthy."

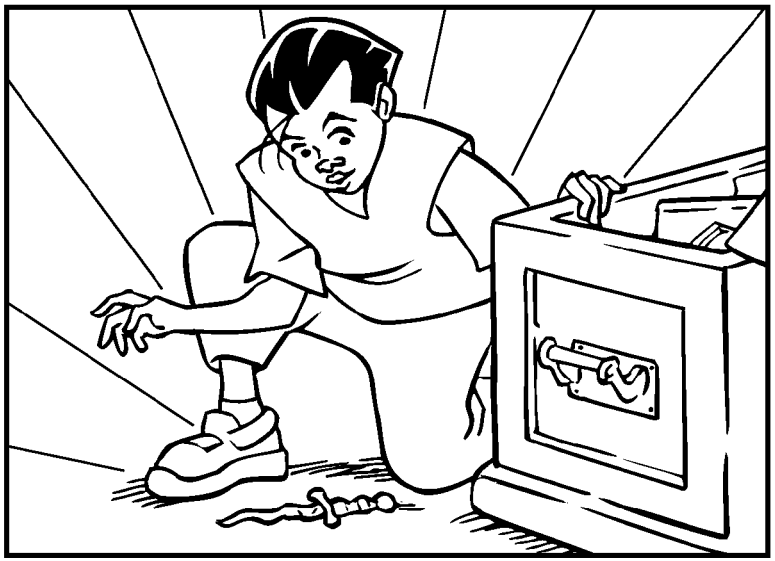
"That was hundreds of years ago," Trevon said.

"It was still wrong," Lily said.

"Just imagine how greed and glory made these guys do crazy things, things they probably wouldn't do under normal circumstances, all in the name of discovery," replied Miguel.

On the walk home, Miguel wondered what he might be willing to give up in the name of adventure and discovery. Would he hurt or steal? He thought no, but he wasn't sure what risks he would take. How far would he go to find the **ultimate** discovery?

That evening, after doing his homework, Miguel wandered up the old red ladder to his favorite place—the loft. Thoughts of gold-searching explorers drifted through his mind. He reached out to open the Great Gallardo's chest when something slipped and clanked to the ground. It was a rusty, metal dagger with a jagged, worn blade. Miguel wondered what other secrets the mysterious and **enchanted** trunk held.



Miguel pulled from the chest a black leather-bound book titled *Journey to the Center of the Earth* by Jules Verne. Miguel's dad had read the story to him last year when he had been sick at home with the mumps. "I remember this dagger," he said, "or at least one just like it. It belonged to an explorer from Iceland, Arne Saknussemm. According to the book, Arne was the first man to travel to the center of Earth." Then Miguel also remembered his favorite character, Hans. He admired Hans's adventurous spirit and bravery.

Miguel's heart pounded. He knew if he opened the book, he would be taking a journey, and there was no telling what might be in store for him. Miguel opened the book and started to read . . .
"My uncle ventured beneath the gigantic groves. I followed him, though not without a certain ***apprehension*** *. . . "*

Deep in the center of the earth, the main character, Harry, and his uncle, Professor Von Hardwigg, had just discovered a mummy. The mummy looked to be between thirty and one hundred thousand years old. The bones of **prehistoric** saber-toothed tigers and other creatures lay all around it. Harry was **apprehensive** about finding living prehistoric people and mammals. He feared that he and the professor might be in danger.

Miguel read more, but the words jittered on the page . . ."*eyes saw really thought did see with immense animals no, under I moving I my gigantic I mighty own about trees . . . my own."*

The words began to jumble and made little sense to Miguel as he tried to read on. He closed his eyes.

A Giant Discovery

Miguel found upon opening his eyes that the air he was breathing felt thick in his lungs. He knew that from where he had been in the story, in combination with the heavy air, that he had been transported to the center of the earth. Creeping plants twisted among huge palms and pine trees. Mosses and giant ferns blanketed the ground. It was beautiful, except for the fact that everything that should have been green had a faded, brown tint. Even the flowers that should have been all colors of the rainbow were an ugly beige.

A voice boomed from behind Miguel, "Of course, Harry! Now come along."

Miguel jumped and turned to see a tall, skinny man hurry past him. *That must be the professor,* thought Miguel. *And I must be Harry, the main character from the book.*

Miguel rushed after the professor, finally catching him as they reached a clearing where an entire herd of **mastodons** stood grazing under gigantic palm trees. *Now this is excitement!* thought Miguel, remembering his conversation with Trevon and Lily.

The mastodons appeared to Miguel as hairy, oversized elephants with enormous trunks and tusks. Entire trees littered the ground, branches cracked under the mastodons's heavy feet, and leaves rustled as these giants seemed to devour nearly everything in sight. Miguel couldn't believe it. He was experiencing an entire prehistoric world right in the center of the earth. He wondered if the feelings he was experiencing were the same feelings Drake had felt.

"Let's get closer," said the professor. Miguel hesitated, but the professor pulled him forward.

"We aren't strong enough to battle those prehistoric beasts!" Miguel said. He noticed the wild look in the professor's eyes. It seemed as if the professor was in a trance. Professor Von Hardwigg seemed to have lost all reason in his excitement to see, and to be able to get close to, the mastodons.

The professor continued to inch forward. "Look, Harry! There's a human being!"

Miguel saw a giant man who looked twice as tall and as broad as the professor. He was leaning against a mammoth tree. Miguel almost lost his breath.

"Astounding, my boy, isn't it?" the professor said. "Can you believe it Harry? A living prehistoric man!"

The professor then spoke slowly. "He seems . . . to be . . . to be watching the . . . mastodons." Then Professor Von Hardwigg roared with excitement, "He's a mastodon herder! How about that, Harry! We must move closer!"

Miguel's shoulders tensed. The giant human being had some of the features of a man, but his head was the size of a buffalo's. His hair was long like a buffalo's and matted. He held a huge tree branch like a staff.

The professor carefully crept closer.

"Wait," Miguel whispered. The seriousness of what they had found had hit him. "You can't defend yourself against a giant!"

"I shall chance it," Professor Von Hardwigg said, his eyes wildly scanning the creature, "as any true explorer would—this is more incredible than I ever imagined."

"But it isn't worth risking your life," Miguel said to the professor.

"Discovery is worth much more," the professor said, **delirious** with the fever of discovery. "And if I succeed, the entire world will remember that I discovered this ancient man!" As Professor Von Hardwigg stepped forward, a branch broke under his foot.

The giant was startled and looked up at them.

Miguel scrunched his eyes as if closing them would hide both explorers from the giant's sight.

Captured!

A loud grunt came from across the clearing as the giant pulled himself to his full height, pointing his staff in their direction.

"He looks as if he's warning us to stay away," said Miguel.

"Not to worry," the professor said, rounding his shoulders forward and lowering his gaze. "I am no threat to him."

The mastodons stomped and trumpeted. "Turn back," Miguel shouted. Professor Von Hardwigg waved him away as he moved toward the giant.

The giant stepped forward, too, thrashing his staff in the air. The professor crouched lower as if to hide, but the giant advanced quickly toward him.

"Watch out, professor!" Miguel shouted.

In an instant, the giant scooped up the professor and tossed him over his shoulder like a sack of potatoes. The giant raised his staff and howled with victory. He pivoted back toward the mastodon herd and retreated into the woods.

"The greatest adventure yet!" the professor yelled before disappearing into the trees.

Professor Von Hardwigg had been captured just like a fly in a spider's web. Miguel's thoughts blurred. There must be a way to save him! Miguel took off running toward the giant even though his body was trembling with fear. Here he was, stuck in another world, in the center of the earth, with no way out.

What would the giant do to the professor? Was he a prisoner or, like the spider's prey, the giant's next meal? There was no time to find out. "Think, Miguel, think!"

"I know! Hans!" Miguel shouted. "I have to remember where Hans is at this point in the book. I have to find him and get help. Think, Miguel!" Then Miguel heard his dad reading the story from last year as if it were happening right then and he knew—Hans would be at the beach with the raft.

Miguel ran past the clearing, jumping over rushing brooks. Even though the hollow eyes of the mummy sent chills down Miguel's neck, he ran past it, through the cemetery of scattered bones. No time to stop and think about being scared. He just had to push on and get help.

A Two-Man Band

Miguel's feet moved forward, down great walls of speckled and crystallized rock. Once down the slopes, he raced across a white beach made of thousands of shells—the shells crunching and sliding under his feet. "I can hear the ocean!" he said aloud, almost colliding with an empty turtle shell the size of the beanbag chair in his bedroom.

Suddenly a large body of water appeared before him, spreading out as far as he could see. Huge, gray swells, louder than a fleet of jet engines, erupted a few hundred yards offshore. In the distance, Miguel spotted a man working around what looked like a battered raft.

Hans barely looked up from his repair work when Miguel approached him. Out of breath, Miguel panted, "The professor's in trouble! He's been captured!"

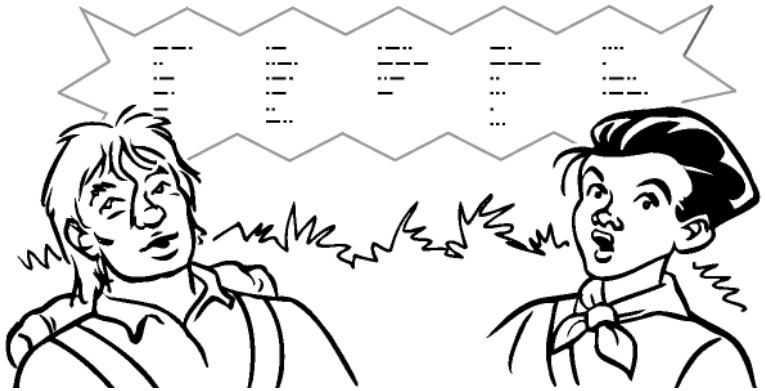
Hans stared up blankly. "He needs our help!" continued Miguel. "Come on!"

Then Miguel remembered that Hans didn't speak English, so he motioned for the man to follow him. Once in the woods, Miguel listened for the mastodons, but all he heard was silence. A lump grew in his throat. *What if he was too late?*

Hans picked up on Miguel's anxiety and crept silently through the ferns, now keeping Miguel behind him. Though he didn't speak English, he seemed to understand what was happening from Miguel's body language. A loud trumpeting sound blasted through the air. Miguel and Hans froze. The mastodons! Miguel reasoned that the professor had to be near! Hopefully he was still alive.

Hans and Miguel followed the sound of the animals until it grew quiet. Then Miguel's ears picked up on something he had not heard before—a quiet tapping. He listened closely. It was Morse code! *Dash-dash-dot. Dot-dot. Dot-dash*. Miguel had learned Morse code at summer camp. "The professor must be sending a message!" he said. Miguel closed his eyes and decoded the taps.

G-I-A-N-T A-F-R-A-I-D L-O-U-D N-O-I-S-E-S H-E-L-P

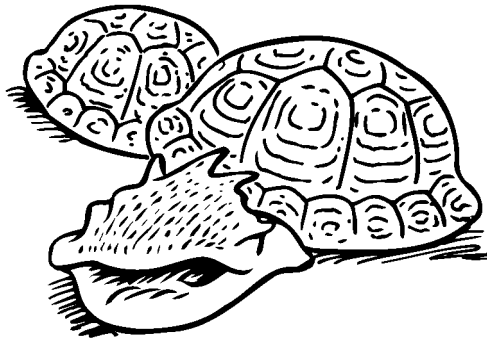


Gears shifted in Miguel's brain as the professor kept repeating the message. "That's it!" Miguel jumped up. He flashed back to school and what he had learned about Sir Francis Drake. Drake had become an expert at toppling Spanish colonies and stealing anything of value that he could find. He did this by playing a trick on the colonists. He would have his crew make lots of noise to make the colonists think there were more members to his crew than there actually were.

"We need to make lots of noise so the giant thinks we are an enormous group of warriors," screamed Miguel, forgetting that Hans couldn't understand him. He then motioned to Hans that they needed to get back to the beach.

Back at the beach, Miguel had Hans stack and carry two large turtle shells. Hans picked up a conch shell the size of a turkey and blew into it, producing a sound like a bass tuba.

"Great idea!" Miguel said. "We'll be a two-man band and rock-and-roll this giant until he's scared to death!"



Hans picked up some heavy sticks to use as drumsticks against the two large shells. Miguel found a conch shell of his own and then strung together a line of smaller turtle shells with a vine. He tied the string of turtle shells around his waist, and then he and Hans headed back to find the grazing mastodons and, hopefully, the giant and the professor.

It wasn't long before they found the giant stooping over a campfire. Nearby, the professor was staked to the ground with vines. Miguel went into action, and Hans followed suit. Miguel flipped the turtle shells over, grabbed a stick and began to drum across the tops of the shells. Hans lifted his conch shell and began blowing as loud as he could.

Along with the horn and the drums, Miguel began to scream the first song that popped into his head. "WE WILL, WE WILL, ROCK YOU . . . "

The giant immediately stood erect. His eyes darted about the forest.

" . . . WE WILL, WE WILL, ROCK YOU!"
Bang, bang, honk, honk!

The mastodons roared and so did the giant.

"Keep it up, boy!" shouted the professor.

" . . . WE WILL, WE WILL, ROCK YOU!"

Upon Miguel's last verse, trees and bushes bent and cracked in opposite directions as the mastodons took off—the giant running close behind them.

"You've done it!" the professor cheered. "You've scared away the mighty beasts!"

Miguel rushed over to the professor. "You're safe!" he cried.

"Thanks to you and Hans!" the professor said. "Now untie my bonds, Harry, before that giant returns!"

Miguel glanced around in hopes of finding a stone tool or weapon when he remembered what he had in his pocket. He gently pulled out the dagger he'd found on the Great Gallardo's chest and cut the palm twine that held the professor down. A lightbulb clicked on inside Miguel's head. *It's like the book knows what I'll need to make things right!*

Professor Von Hardwigg bear-hugged Miguel. "You were right, Harry," Professor Von Hardwigg said. "Nothing is worth risking our lives, not even the most astonishing discovery. Let's go home."

Home sounded wonderful. Miguel handed the dagger to the professor. "Here is something you can take home with you."

"Is that what I think it is?" the professor gasped. "Could it be the famous dagger of Arne Saknussemm, the first explorer to reach the center of the earth?" Hans looked at the dagger in awe at the mention of the fellow Icelander's name.

As Miguel let go of the dagger, he closed his eyes. In seconds, a cool breeze met him back at the loft, safe and sound.

Miguel breathed a sigh of relief. Now he had witnessed first-hand how dangerous and overwhelming the power of discovery could be. Explorers were brave and smart, but often blinded by the **perceived** glory of their discovery. Miguel was glad he'd saved the professor, but for now, Miguel was content to discover each day of his *own* life—right here and right now, with, of course, a little help from the Great Gallardo's books every now and then!

Glossary

apprehension	the feeling or act of being held back by fear (p. 7)
apprehensive	fearful or worried that something bad might happen (p. 7)
armada	a large group of ships (p. 5)
delirious	excited enough to seem crazy (p. 13)
enchanted	magical, or put under a spell (p. 6)
mastodons	prehistoric elephants similar to mammoths with shaggy hair and two sets of tusks (p. 9)
perceived	understood something in a certain way (p. 23)
prehistoric	a time before history could be written (p. 7)
privateer	a person who commands a private ship that fights for a country during war (p. 4)
ultimate	the best or greatest (p. 6)

Name _____

Instructions: Draw a picture in each box to represent a part in the story where you stopped to visualize. Write a brief description under each picture.

IN THE NAME OF DISCOVERY • LEVEL V • 1

SKILL: VISUALIZE

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Name _____

Instructions: Write a character's name under the *Character* heading. List a character trait that describes the character under the *Trait* heading and clues from the story that support that trait under the *Clues* heading.

Character	Trait	Clues

IN THE NAME OF DISCOVERY • LEVEL V • 2

SKILL: ANALYZE CHARACTERS

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Name _____

Reading a-z

Instructions: Join each pair of sentences with an appropriate conjunction to create a compound sentence. Write the new sentence on the lines provided.

1. Miguel thought that he wouldn't change. He wasn't sure.

_____

_____

2. He knew he would be taking a journey. There was no telling what might happen.

_____

_____

3. Miguel remembered his favorite character. He admired his spirit and bravery.

_____

_____

4. The giant was startled by the professor. He thrashed his staff in the air.

_____

_____

5. The professor crouched lower as if to hide. The giant advanced quickly toward him.

_____

_____

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Name _____

Instructions: Read the sentences below and decide which ones contain a simile. (Remember to look for the key words *like* or *as*.) Below each sentence containing a simile, write the two things being compared. If the sentence does not contain a simile, leave the line blank. Then write a simile of your own on the lines provided.

1. It made his real life feel as boring as watching paint dry.

_____

2. Miguel saw a giant man who looked much taller the professor.

_____

3. Leaves rustled as these giants devoured everything in sight.

_____

4. The giant tossed the professor over his shoulder like a sack of potatoes.

_____

5. "He looks as if he's warning us to stay away," said Miguel.

_____

6. As Professor Von Hardwigg stepped forward, a branch broke under his foot.

_____

7. Professor Von Hardwigg had been captured just like a fly in a spider's web.

_____

8. He blew into the shell, producing a sound like a bass tuba.

_____

My simile:

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Fungus Among Us

A Reading A–Z Level V Leveled Reader

Word Count: 1,546

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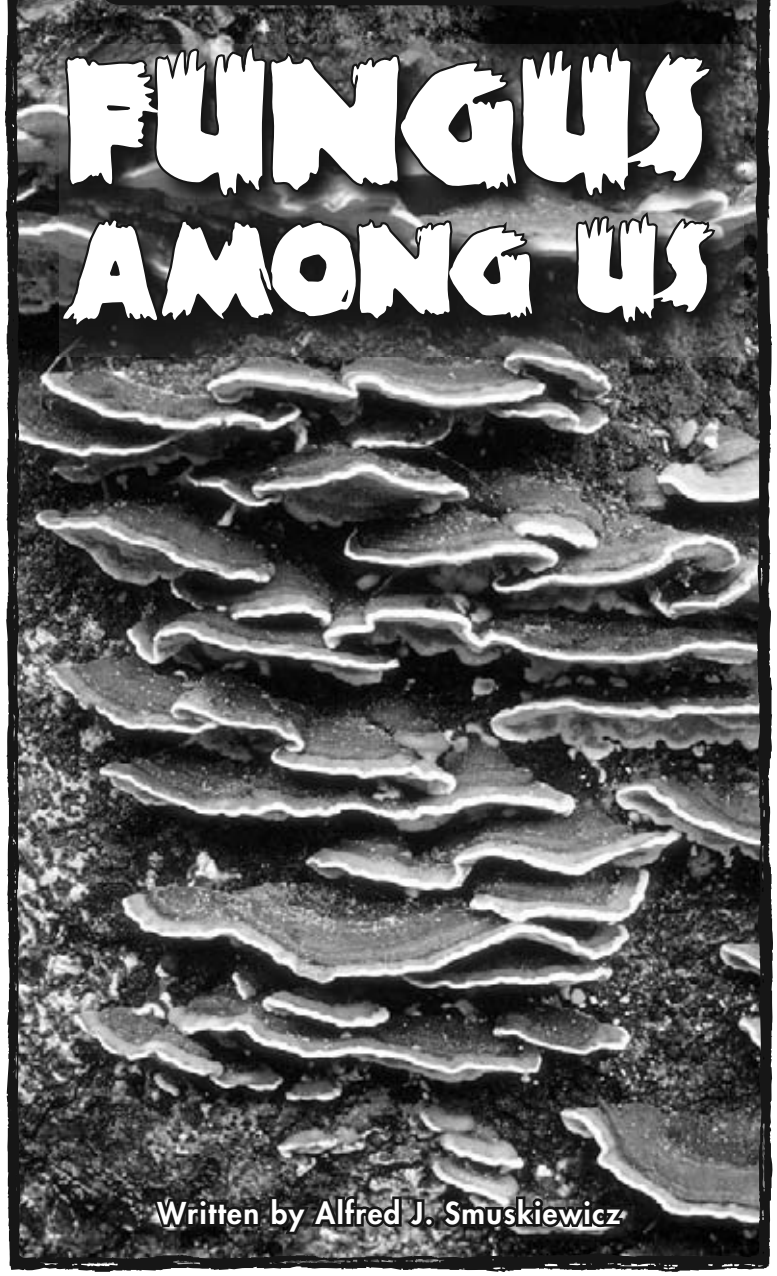

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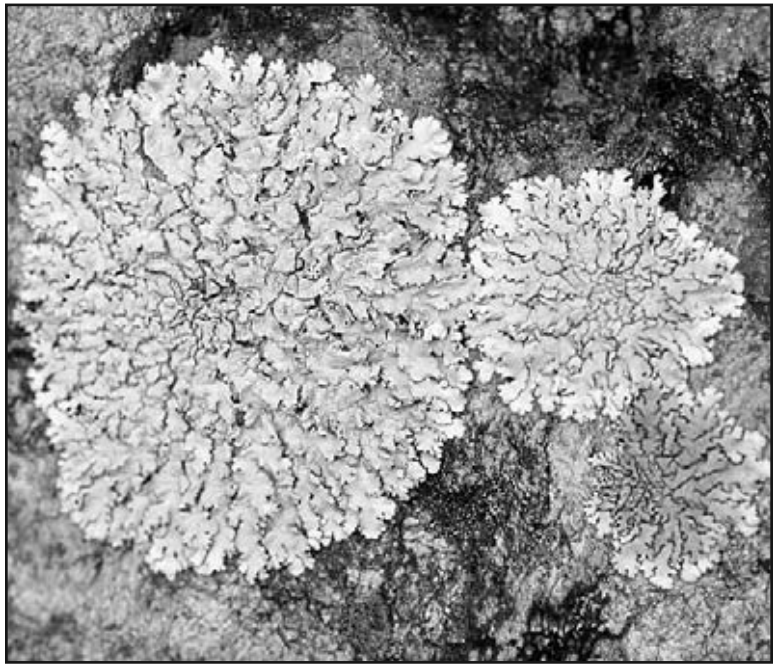

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What Are Fungi?

What does the white, fuzzy mold on stale grapes have in common with the small brown mushrooms growing in your neighborhood park? What does the itchy, scaly skin on someone's feet have in common with the yeast used to make bread rise?

All four of these **organisms** are types of **fungi**. Fungi make up one of the five **kingdoms** of living things. The other four kingdoms are bacteria, protists, plants, and animals. Fungi may not be as colorful as flowers, and they don't move around a lot like animals, but members of Kingdom Fungi can grab your attention in other ways. They come in a wide variety of shapes and sizes, have their own unique ways of living, and play important roles in health care, food production, and other human activities.

Many people think that fungi are plants. However, plants carry out a process called photosynthesis, in which sunlight, water, and carbon dioxide gas are used to make the plant's food. Fungi cannot carry out photosynthesis so they have to obtain their food in another way.

Do You Know?

When scientists study the chemical makeup of fungi, fungi appear to be more like animals than plants. This is why diseases caused by fungi are hard to cure. Medicines that harm fungi can also harm humans or other animals.

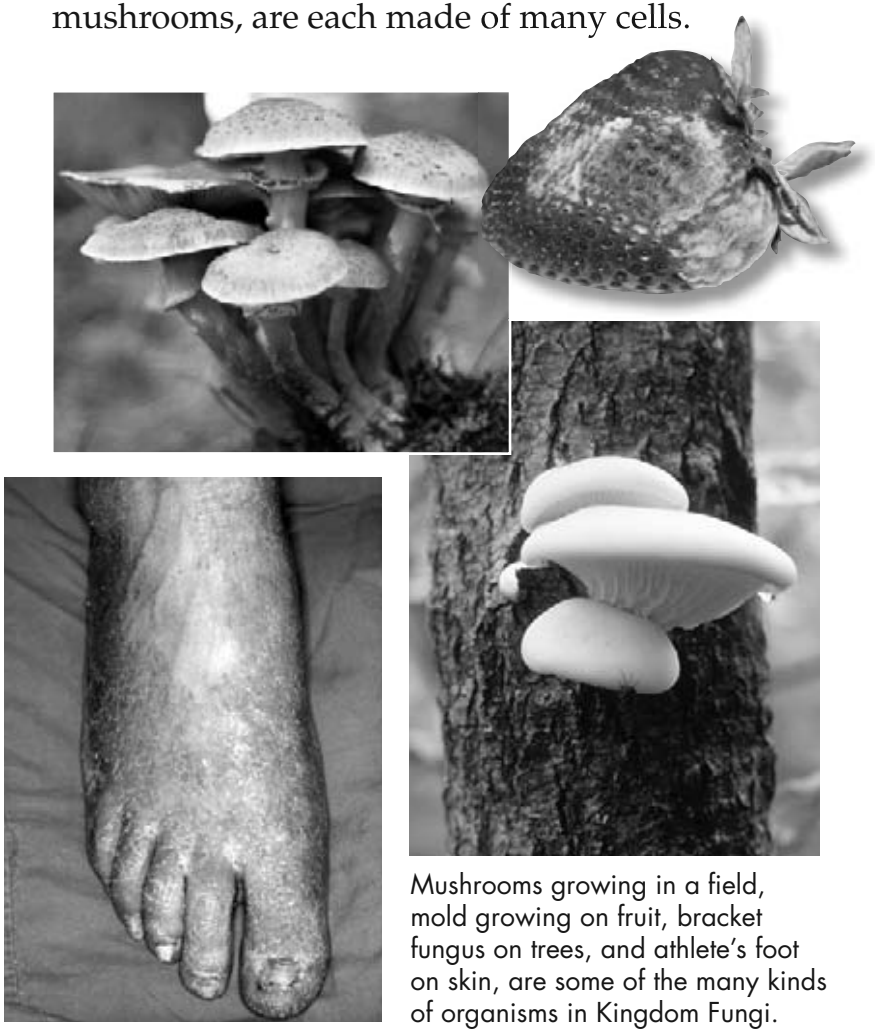
Mycologists may study fungi by using computers, laboratory equipment, and indoor collections, or they may search for fungi outdoors.

Fungi obtain their food by releasing chemicals called **enzymes** into their surroundings. The enzymes cause complex molecules around the fungi to break down into simpler chemical **nutrients**. The fungi then absorb the nutrients through long, threadlike cells called **hyphae**.

Another thing that most fungi have in common that separates them from many plants is that they make tiny structures called **spores**. The spores, which can be carried by wind, water, or animals, grow into new fungi.

The Many Kinds of Fungi

Mycologists, scientists who study fungi, have identified more than 100,000 **species** of fungi. Some kinds of fungi, such as yeasts, are each made of only a single cell. However, most kinds of fungi, including molds, mildews, and mushrooms, are each made of many cells.

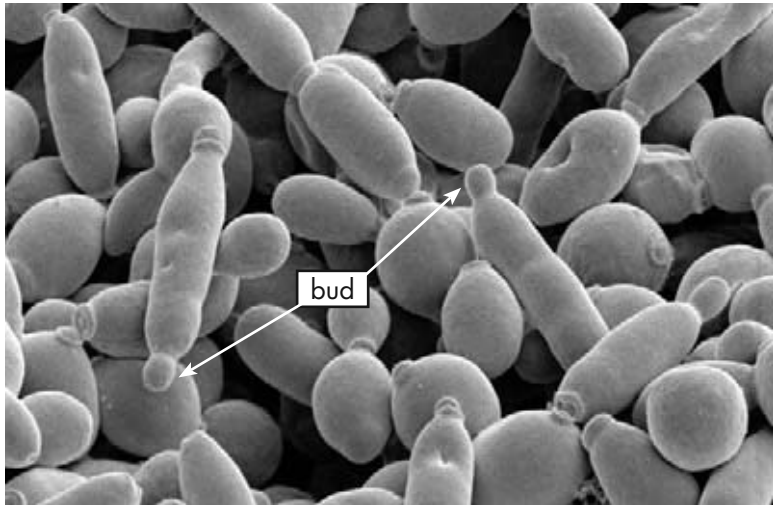


Mushrooms growing in a field, mold growing on fruit, bracket fungus on trees, and athlete's foot on skin, are some of the many kinds of organisms in Kingdom Fungi.

Yeasts

The next time you eat a sandwich, you may want to say, "Thank you, yeast!" Yeasts are single-celled fungi that are used in the bread-making process. They release carbon dioxide gas bubbles that make bread rise into the soft, fluffy loaves that you eat. Yeasts are also used to make beer and wine.

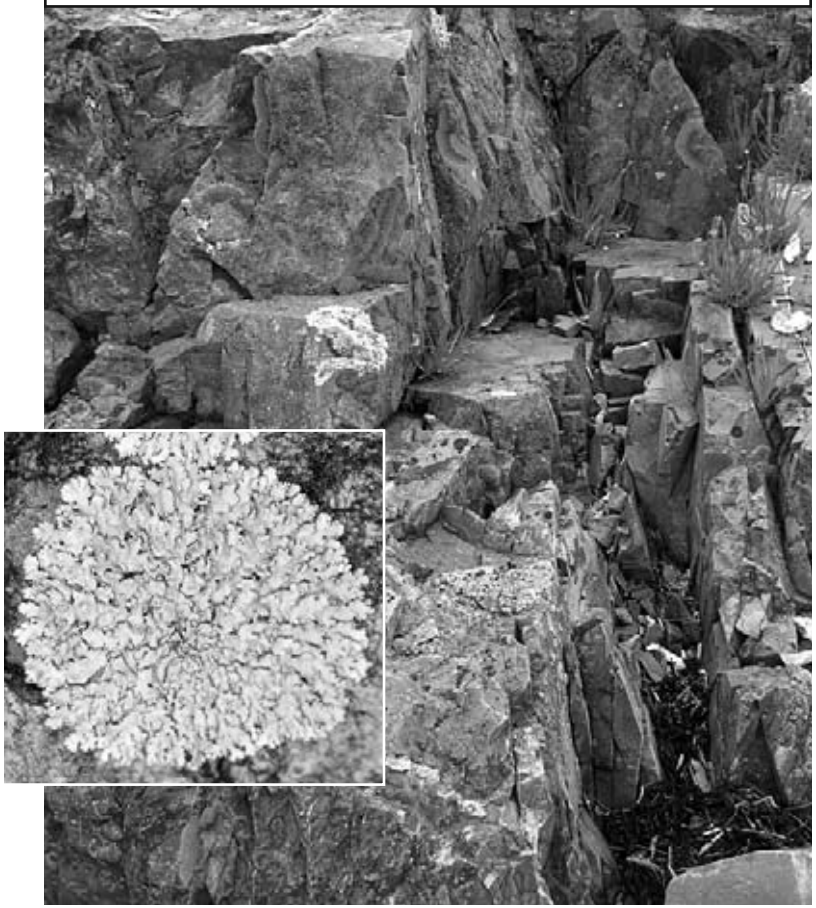
Some kinds of yeasts **reproduce** by making spores, but other kinds reproduce by budding. In budding, a small bulge—a bud—forms on a yeast cell. A hard wall forms around the bud, which then separates from the old yeast cell. The bud then becomes a new yeast cell.

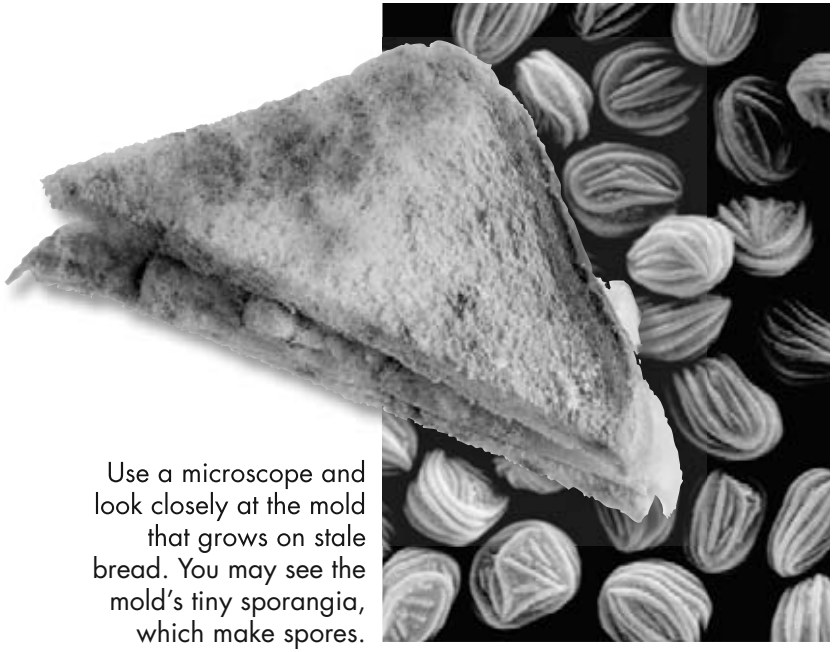


A small bud grows on the side of a yeast cell. The bud will separate from the cell and grow into a new yeast cell.

A Special Relationship

Have you ever seen a crustiness—maybe it was gray, yellow, orange, or brown—growing on a rock? That growth may have been a lichen, which can be created when fungi and algae grow together. The algae make food that the fungi use, and the fungi absorb water that the algae can use. Lichens grow on rocks and tree bark. Many lichens grow in cold places where there is very little to eat for other life forms. Lichen are an important food for reindeer, caribou, and other animals.



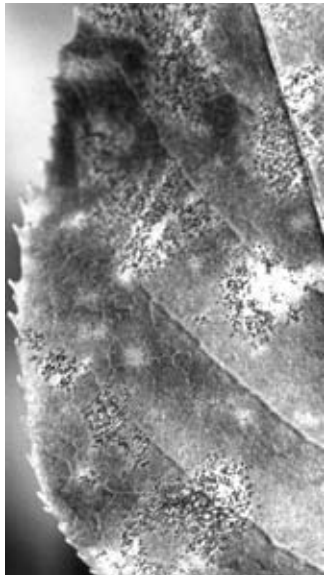


Use a microscope and look closely at the mold that grows on stale bread. You may see the mold's tiny sporangia, which make spores.

Molds

Do you remember being hungry for a piece of fruit like an orange, only to find that it was covered with blue-green white fuzzy stuff? "Yuck!" That fuzzy growth was mold. Mold is a type of fungus that can grow on fruit, such as grapes, peaches, and grapefruit, as well as on bread, cheese, and other foods.

Many kinds of molds have hyphae (remember these help fungi absorb nutrients) that stick straight up like pins. The "pinheads" have tips called **sporangia**, which produce spores. These pinheads are also what give mold its fuzzy look.



Powdery mildew covers the surfaces of this plant's leaf.

Mildews

Mildews are fungi that are parasitic—that is, they live in or on organisms that they feed on. Many mildews form powdery blotches on the leaves of such plants as apple and cherry trees, rose bushes, and pea plants. People often call the scum that forms on bathroom walls "mildew," but the stuff that plagues most bathrooms is actually bacteria, not fungi.

Mushrooms

Among the more than 5,000 species of mushrooms are white ones, yellow ones, orange ones, red ones, and brown ones. Most species grow in the woods or in grassy areas, where they live on dead, decaying matter, such as dead grass. The hyphae of a mushroom form a tangled mass called a **mycelium** underground—just below the surface. The mycelium can grow and spread underground for many years. The umbrella-like parts that you see above the surface live only for a few days—just long enough to produce spores.

These fly agaric mushrooms, below, are poisonous while other mushrooms such as the enoki, or straw mushrooms, right, are edible.

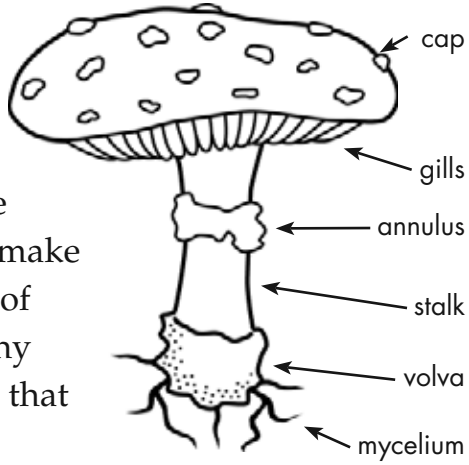
The Largest Living Thing

You may think the largest living thing is a blue whale or a giant redwood tree, but both of these creatures are dwarfed by an underground fungus that grows in Malheur National Forest in Oregon. The mycelium of this fungus spreads out for 3.5 square miles (5.6 sq. km)—an area larger than 1,600 football fields! Few people have seen this giant, however, because the only parts that are above ground are clusters of small golden-brown fruiting bodies that pop up every now and then.

Parts of a Mushroom

A mushroom grows out of the ground on a **stalk**, which—depending on the mushroom—can be between 3/4 inch (1.9 cm) and 15 inches (38 cm) high. At the stalk's top is a round **cap**, which can be as wide as 18 inches (46 cm) in the largest mushrooms. The stalk and cap together are called the **fruiting body** of the mushroom.

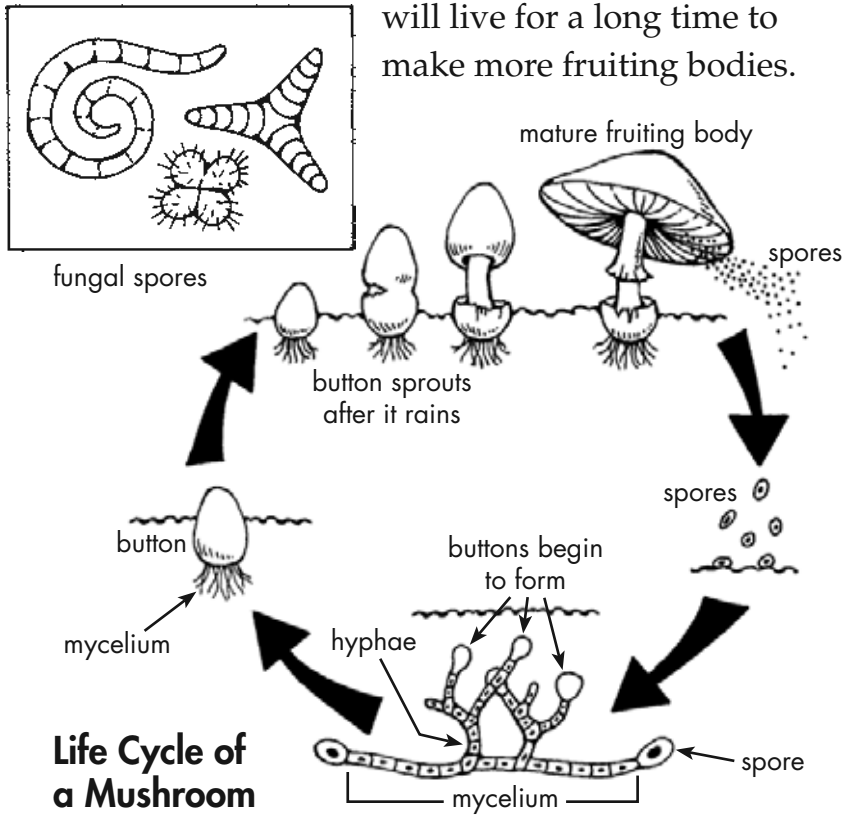
On the underside of the cap of many mushrooms are rows of thin, bladelike structures called **gills**. Unlike the gills of fish, these gills do not help the mushroom breathe. Instead, the gills have cells that make spores. Some kinds of mushrooms have tiny tubes under the cap that make spores.



Life Cycle of a Mushroom

A life cycle refers to the different stages of development that a species goes through, from when an organism first starts to grow to when it dies, to when a new organism starts to grow. Each species of fungi has a certain kind of life cycle.

The life cycle of a typical mushroom begins when a spore lands in a place with enough food and water to **germinate**. The hyphae of the growing fungus branch out underground to form a mycelium. Sometimes, the hyphae of two different mushrooms join together in a mycelium. Tiny knots, called **buttons**, grow on the mycelium. These buttons sprout into fruiting bodies, which may quickly shoot above the surface after a heavy rain. After the new mushroom releases its spores, the fruiting body withers away, but the mycelium will live for a long time to make more fruiting bodies.



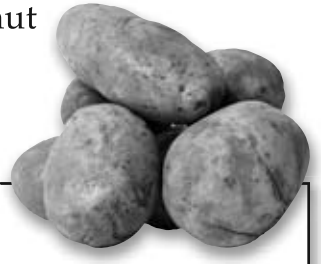
Life Cycle of a Mushroom

Fungi That Are Harmful

Many kinds of fungi are harmful to plants, animals (including people), or items made by people. Mildews and certain other fungi often grow in books, clothing, and wood in damp places. The fungi cause these items to decay.

Other parasitic fungi cause diseases in crops, especially cereal crops like wheat, rice, oats, and corn. Sometimes spores of these fungi get inside the seeds of these grains. When the grain drops to the ground, they spread into the new plants growing from the seeds.

Dutch elm disease is caused by a fungus that is carried from tree to tree by insects called bark beetles. The fungus can kill a large elm tree in four to eight weeks. A similar fungus, called chestnut blight, killed nearly all the chestnut trees in the United States in the early 1900s.



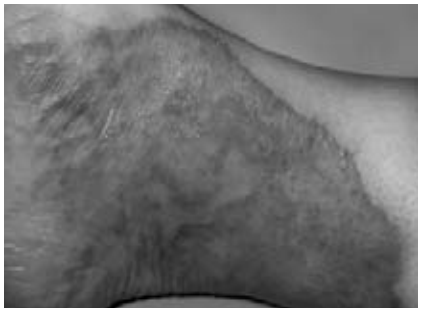
The Great Irish Famine

In the 1840s, a fungal disease called blight killed most of the potato plants in Ireland. At that time, people in Ireland depended on potatoes for most of their food. Because the blight was so extensive, about one million people in the small country died from starvation. Millions of others left Ireland for the United States, Canada, and England.

Fungal Diseases in People

Hot, sweaty feet are not very attractive, unless you're a fungus! Some microscopic fungi grow best on warm, moist skin between toes and on the soles of feet. These fungi cause an **infectious** disease called athlete's foot, in which the skin becomes red, scaly, and itchy. To avoid getting this disease, you should keep your feet clean and dry, and wear socks that allow fresh air in.

Ringworm is the name of various kinds of skin diseases caused by fungi. These diseases take the form of red, scaly rings on the neck, back, chest, or other areas of the skin. Ringworm can spread from person to person easily through contact with infected skin or through almost anything else that has touched the affected area and then made contact with skin.



People with ringworm have red, itchy rings on their skin. This ringworm covers most of this person's ankle.

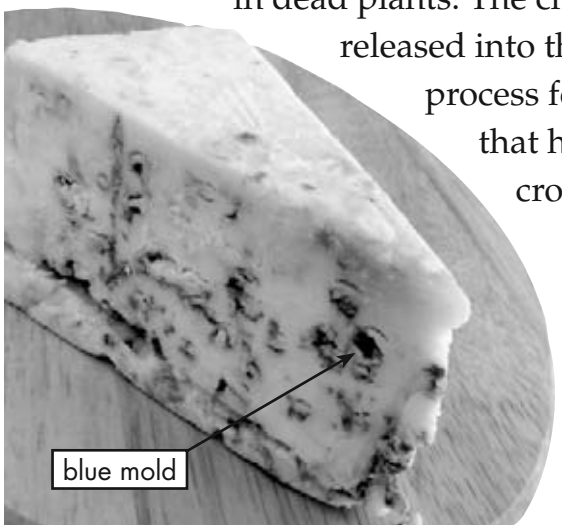
Other kinds of fungal diseases affect the lungs, kidneys, throat, or other inside parts of the body. Harmful fungi can be killed with chemical solutions called **fungicides**.

Fungi That Are Useful

Not all fungi are harmful. In fact, some fungi help cure people of diseases. Certain types of molds make chemical substances that doctors use as antibiotics, or medicines that weaken or kill bacteria that cause diseases. One of the more common fungal antibiotics is called penicillin. It is used to treat people with pneumonia and many other diseases caused by bacteria.

Other kinds of molds are used to make cheese. When these molds are added to the cheese, they cause chemical reactions that change the cheese's flavor and make the cheese ripen.

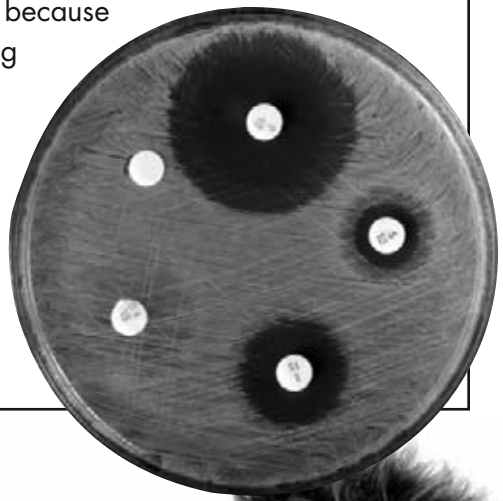
Other fungi help food in different ways. Farmers rely on fungi to help **decompose** material in dead plants. The chemicals released into the soil in this process form nutrients that help new crops grow.



Some kinds of cheese, like blue cheese, are made with blue mold, which causes the cheese to ripen.

A Great Accidental Discovery

Penicillin, the first antibiotic used to treat people with serious diseases, was discovered accidentally in 1928 by Sir Alexander Fleming in England. Fleming noticed a green mold growing in a laboratory dish with some bacteria. He saw that all the bacteria around the mold were dead. That was because the mold was releasing a chemical substance that was harmful to the bacteria. Other researchers later found out how to use this substance—penicillin—to kill bacteria in people.



Be a Mushroom Hunter!

What do you think would be a fun way to learn more about fungi? How about if you go out and try to find them? You might spot some mold or mildew here or there, but you'll probably have the most fun if you try "hunting" for mushrooms. **But remember not to put any mushrooms in your mouth and to wash your hands after handling fungi!** Although it is safe to eat some kinds of mushrooms, other kinds contain poisons that can make you very sick! It is difficult to tell the poisonous kinds from the nonpoisonous kinds—unless you are a very experienced mushroom hunter. In fact, you should always go with an experienced mushroom hunter.

Fall and spring, after heavy rains, are the best times to look for mushrooms. Before you start your hunt, you may want to go to the library or search the Internet to find out more about the mushrooms that grow in your area. The mushrooms on pages 20 and 21 are meant to give you an idea of some of the many kinds of fungi in North America.

Do You Know?

People used to kill pesky flies by sprinkling sugar on top of fly agaric mushrooms. The flies were attracted to the sugar. But when they landed on the mushrooms and began eating, the poison in the mushrooms killed them.

Fungi Can Be Fun!

After reading this book, have you drawn any conclusions about fungi? Have you been surprised by anything you learned? Perhaps one thing you might have discovered is that fungi can be fun! Keep an eye out for fungi, and see what else you might discover about these special organisms.

Experiment: Grow Your Own Fungus

You can grow your own mold! **(Please check with a parent or guardian before doing this.)**

1. Place a slice of bread or a piece of fruit in a plastic sandwich bag. The bread or fruit will provide nutrients for the mold spores.
2. Put a moist paper towel inside the plastic bag with the food and close the bag. The closed bag will lock in the moisture, which the mold needs to grow.
3. Try this with several different types of food.
4. Leave the food until fuzzy mold starts to grow (in about 3 to 5 days).

Are there differences in the kinds of mold that grow on different kinds of food? Write down or draw pictures of what you see.

POISONOUS

Destroying angel
(*Amanita virosa*)
Woods, under trees;
eastern North America

Fly agaric
(*Amanita muscaria*)
Woods, under trees;
throughout North America

Jack-o'lantern
(*Omphalotus olearius*)
Clusters on tree stumps,
glows in the dark;
eastern United States

False chanterelle
(*Hygrophoropsis aurantiaca*)
On or near logs and stumps;
northern North America

NONPOISONOUS

Oyster mushroom
(*Pleurotus ostreatus*)
Clusters on logs and stumps;
throughout North America

Shaggy mane
(*Coprinus comatus*)
Lawns, fields, roadsides;
throughout North America

Old man of the woods
(*Strobilomyces floccopus*)
Under trees; eastern
North America

King bolette
(*Boletus edulis*)
Under cone-bearing trees;
North America, except
in central region

Glossary

buttons *(n.)* knots on a mycelium that develop into a mushroom's fruiting bodies (p. 13)

cap *(n.)* the round top of a mushroom (p. 12)

decompose *(v.)* to break down into simpler chemical substances (p. 16)

enzymes *(n.)* chemical substances that cause or change chemical reactions without being changed themselves (p. 5)

fruiting body *(n.)* the mature part of a fungus that produces spores (p. 12)

fungi *(n.)* living things that obtain their nutrients through absorption (p. 4)

fungicides *(n.)* chemical solutions that can kill or slow the growth of fungi (p. 15)

germinate *(v.)* to begin to grow (p. 13)

gills *(n.)* parts on a mushroom that have cells that make spores (p. 12)

hyphae *(n.)* long, threadlike structures that fungi use to absorb nutrients (p. 5)

infectious *(adj.)* refers to diseases that can spread from one organism to another (p. 15)

kingdoms *(n.)* the five main groupings of living organisms, including bacteria, protists, fungi, plants, and animals (p. 4)

mycelium *(n.)* a tangled mass of hyphae on a fungus (p. 11)

nutrients *(n.)* chemical substances that organisms need to live (p. 5)

organisms *(n.)* living things (p. 4)

reproduce *(v.)* to make a new generation of organisms (p. 7)

species *(n.)* specific types of living things (p. 6)

sporangia *(n.)* structures on fungal hyphae that produce spores (p. 9)

spores *(n.)* tiny structures made by fungi that can grow into new fungi (p. 5)

stalk *(n.)* the part of a mushroom that grows out of the ground, beneath the cap (p. 12)

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Name _____

Reading a-z

Instructions: In the first column, write what you already know about fungi. In the second column, write what you would like to know about them. After you finish reading, fill in the third column with what you learned and the fourth column with what you still want to know.

S: What I still want to know	
L: What I learned	
W: What I would like to learn	
K: What I already know	

FUNGUS AMONG US • LEVEL V • 1

SKILL: KWLS/ASK AND ANSWER QUESTIONS

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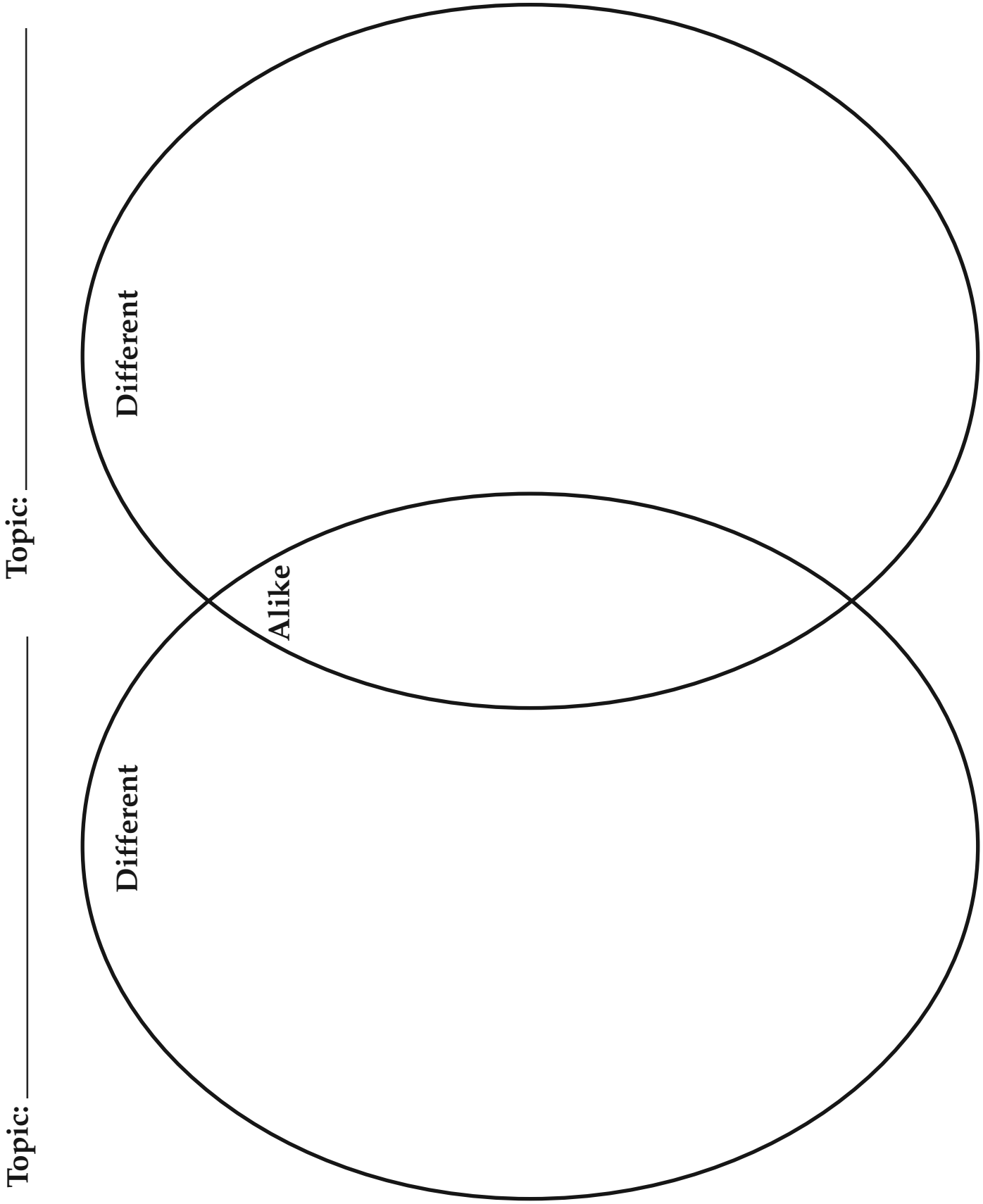
Name _____

Instructions: Write in the two topics you are comparing. Write details that tell how the topics are different in the outer circles. Write details that tell how the topics are alike where the circles overlap.



FUNGUS AMONG US • LEVEL V • 2

SKILL: COMPARE AND CONTRAST

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Name _____

Reading a-z

Instructions: Read the sentences below and decide if they contain dashes or hyphens. Then write D for dash or H for hyphen on the short line to the left of each sentence. If the sentence contains a dash, explain how it is used on the line below each sentence.

_____ 1. Yeasts are single-celled fungi that are used in the bread-making process.

_____

_____ 2. In budding, a small bulge—a bud—forms on a yeast cell.

_____

_____ 3. Have you ever seen a crustiness—maybe it was gray, yellow, orange, or brown—growing on a rock?

_____

_____ 4. The mycelium of this fungus spreads out for 3.5 square miles—an area larger than 1,600 football fields!

_____

_____ 5. The only parts that are above ground are clusters of small golden-brown fruiting bodies.

_____

_____ 6. The hyphae of a mushroom form a tangled mass called a mycelium underground—just below the surface.

_____

_____ 7. These parts live only for a few days—just long enough to produce spores.

_____

_____ 8. Other researchers later found out how to use this substance—penicillin—to kill bacteria in people.

_____

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Name _____

Reading a-z

Instructions: Use a thesaurus to choose a synonym for each word. Then use the synonym in a sentence.

Word	Synonym	Sentence
beautiful		
cold		
happy		
hot		
noisy		
quiet		
small		
weak		

FUNGUS AMONG US • LEVEL V • 4

SKILL: SYNONYMS

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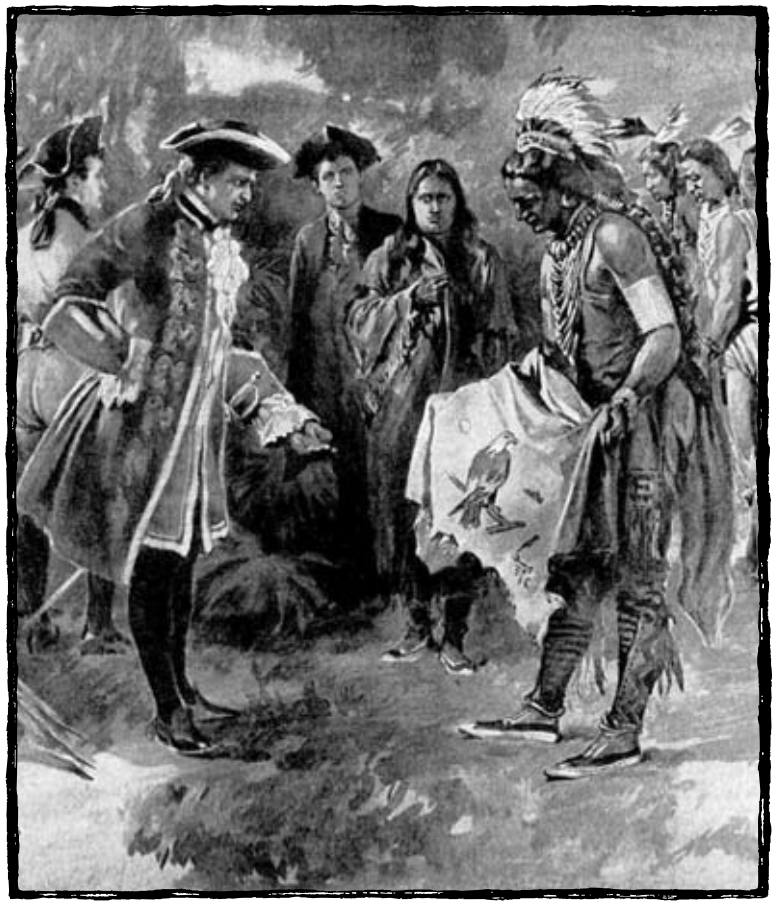
Prehistoric Trade

A Reading A–Z Level V Leveled Reader
Word Count: 2,008



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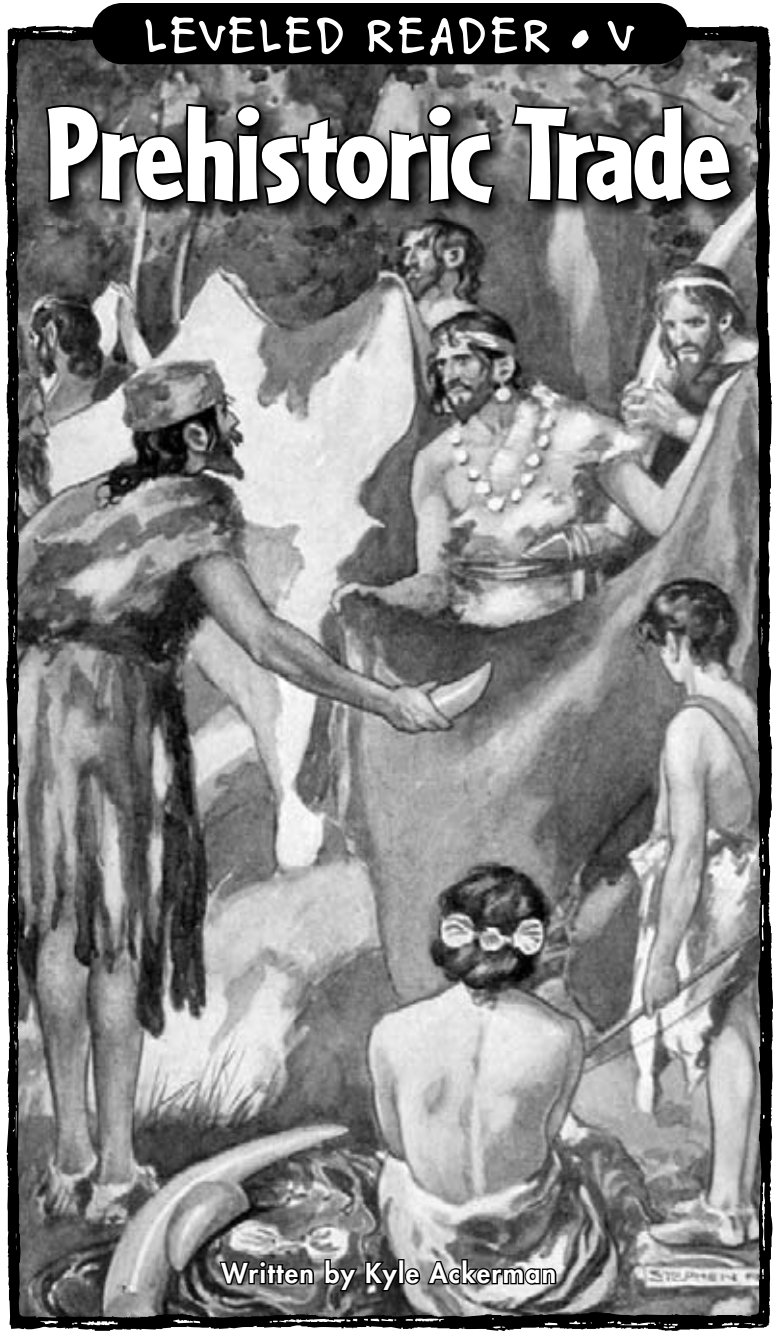
LEVELED READER • V

Prehistoric Trade



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Source materials for maps on pages 6, 10, 15, and 20 obtained from The Atlas of World Archaeology, edited by Paul G. Bahn in 2000, and from the U.S. Geological Survey.

Front cover: Ancient traders discuss a trade of animal tusks for animal hides.

Back cover: Many trade networks in North America were well-established before Europeans ventured across the Atlantic Ocean during colonial times.

Title page: Ships use the St. Lawrence Seaway to move goods for trading.

Table of Contents: The fur trade became big business in North America during colonial times.

Prehistoric Trade
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Correlation

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Introduction

People play in Yu-Gi-Oh! tournament.

As soon as the bell rang, Robert stuffed that night's homework into his backpack. He ran for the front steps of the school. Every day, Robert and his friends sat and played a trading card game. Robert, William, and Rudolfo liked to play, but sometimes they would just sit and trade cards.

William often got good cards from his cousin in California, and Rudolfo got cool cards from his family's shop downtown. Robert always liked to trade, but today was special. There was a new student in the class who had just moved from Japan, and Haruki liked to trade cards, too.

Haruki wanted to trade cards with William, and had cool cards from Japan that William had never seen! All of Haruki's cards were in Japanese, and no one at Robert's school had them. Haruki traded cards to William that William had never played with, and William gave Haruki some cool cards in return. Haruki shared these English language cards with his friends in Japan.

Long-Distance Trade

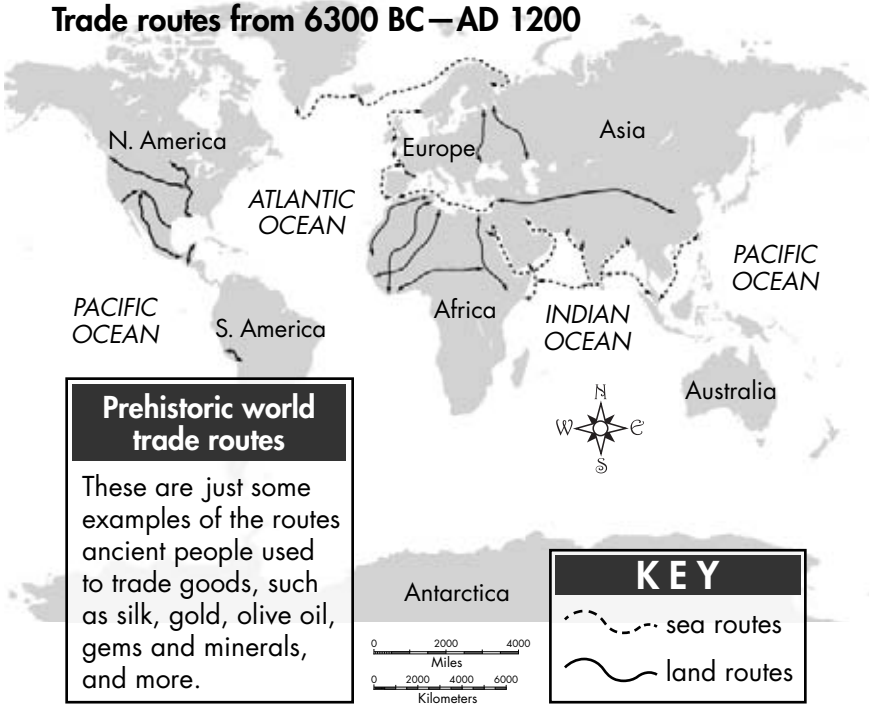
Trade is an exchange of one thing for another. Trade can involve doing work in return for an object, or trading valuable items, just like William and Haruki traded game cards. If people didn't trade, every family would have to grow its own food, sew its own clothes, and build its own house. Trade is a basic human activity that makes it possible to enjoy products from all over the world.

Now, everyday objects can come from anywhere in the world. Things in your backpack might have been made in your hometown. They also might come from Canada, Mexico, Australia, China, France, or even Brazil!

Stop & Think

Where do the objects in your bedroom come from? Read the labels on your clothes or toys and look at a map. How far has your clothing traveled?

Trade routes from 6300 BC—AD 1200



Prehistoric world trade routes

These are just some examples of the routes ancient people used to trade goods, such as silk, gold, olive oil, gems and minerals, and more.

Ancient people, who lived thousands of years before us, also traded objects over long distances. In Europe, men would spend months crossing oceans and traveling up rivers to trade swords or hairpins. In North and South America, people lived and traded for thousands of years before meeting Europeans.

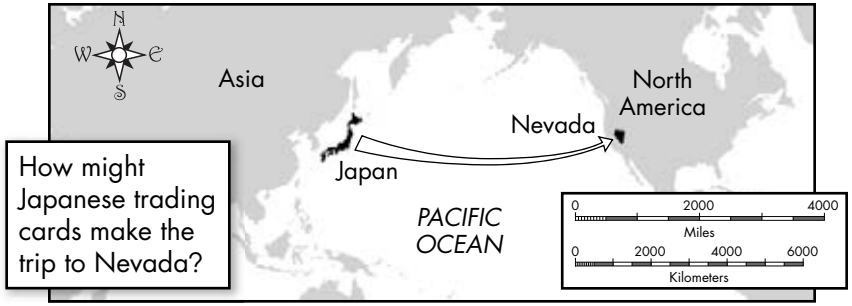
Prehistoric North American trade is a perfect example of how people moved valuable objects thousands of miles to trade them for other special objects. (Prehistoric means it happened before those people made written records, such as books.)

How can we learn about prehistoric trade? One way is through **oral tradition**. Oral tradition is the set of stories that one **generation** tells to the next. Because many people like to add things to stories to make them more exciting or easier to understand, stories that are part of oral tradition change over the years.

Another way to learn about prehistoric trade is through **archaeology**. Archaeology is the study of people through the things they leave behind. By looking at the remains of buildings, graves, and especially the trash people leave behind, we can learn about what people did.

How can archaeology help figure out how prehistoric North American people traded? If an archaeologist finds a broken seashell in the trash of an ancient village in Colorado, she knows those people in Colorado traded with people who lived near an ocean.

Archaeologists dig through buildings from about 1,000 years ago.



How might Japanese trading cards make the trip to Nevada?

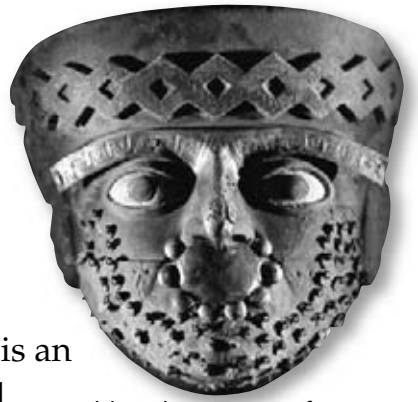
Think about William and his trading cards. If William's family moved houses, and someone found a Japanese card in his old room, that person would know that, somehow, William was trading with Japan!

If the person who found the card didn't know about Haruki, she might think lots of different people traded the card, bringing it from Japan to William. But since it's impossible to buy Japanese cards anywhere near William's hometown, it must have come from Japan.

People often travel farther for a rare and valuable **commodity**. A commodity is something that is traded, such as gold, seashells, or a trading card. Commodities that were traded in prehistoric North America include copper, shells, and animals. In prehistoric North America, people traveled long distances on foot or by boat. Because of this, trade commodities were usually light, valuable objects that would not spoil.

Copper

Objects made from the reddish metal called copper are found in many North American **archaeological sites**. An archaeological site is a place where people have left behind evidence of their lives, such as trash or parts of buildings. Objects found on these sites are called **artifacts**. An artifact is an object that has been shaped or changed by people.

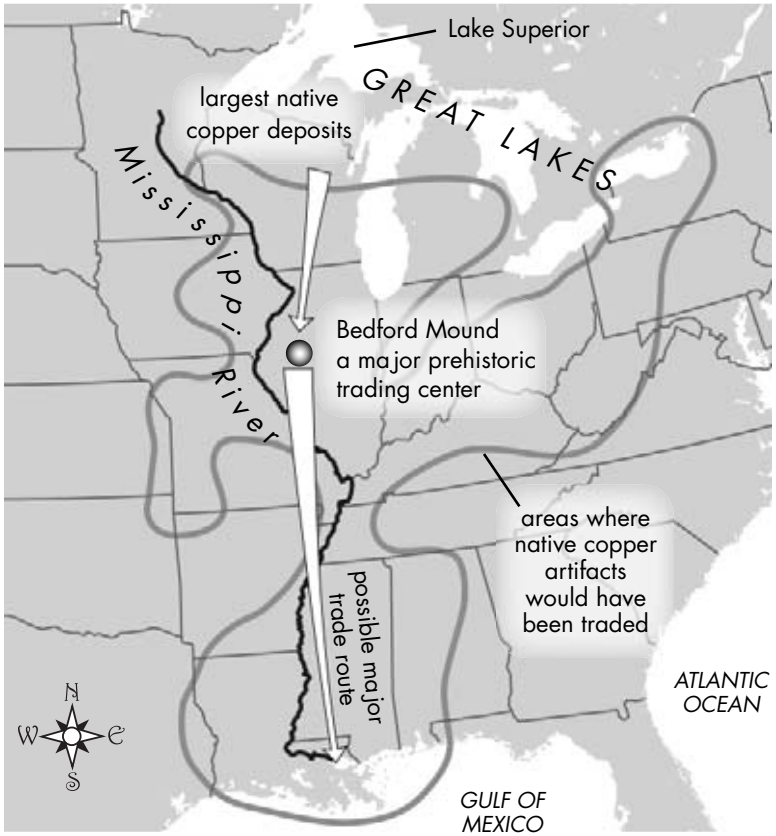


Gold and copper artifact from Peru, South America

Whole copper artifacts have been found on archaeological sites in graves, and broken objects are found in old garbage. Copper artifacts found in North America include fishhooks, knives, jewelry, and bells.

Some of the copper used to make those artifacts was mined in the area around the Great Lakes, particularly around Lake Superior. In most of North America, it was hard for prehistoric people to make metal because metal is often mixed up in rock and that rock is only found in certain areas. Rock with metal in it is called **ore**. To get the metal out of the ore, people have to get it really hot. This is called **smelting** metal.

Native copper trade



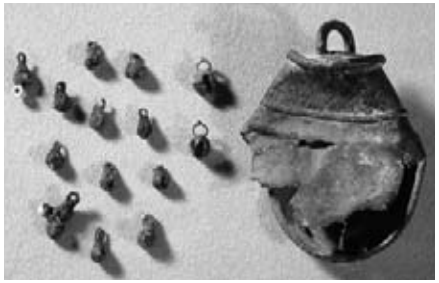
Near Lake Superior, there were very large deposits of **native copper**. Native copper is special because it is very pure copper that can be found in large chunks or as sheets in cracks of rocks. Native copper also does not need smelting. Hundreds of thousands of tons of native copper were mined in this area. Artifacts made from native copper have been found in areas on either side of the Mississippi River and far upstream.

We can tell that this copper was traded great distances in several ways. Many sites where archaeologists find copper artifacts have no natural copper nearby, so we know the copper must have come from far away. Also, by examining copper through a microscope, or examining small amounts of chemicals in the copper, we can tell native copper from smelted copper.

Copper ore needs to be smelted before the metal in the rock can be used.

Native copper does not need to be smelted before the metal can be used.

A different example of long-distance copper trade involves copper bells. Copper bells found at sites in Arizona and New Mexico were made from smelted copper. Ancient people living in Mexico and Central America made copper bells. We know this because we have found tools used to smelt copper and make bells like these in Mexico and Central America, but not in Arizona or New Mexico. This is evidence that these copper bells were traded.



These copper bells traded from central Mexico were found in southeastern Arizona.

Copper artifacts found in North America came from different places. What if William (from the beginning of this book) had trading cards in both Spanish and Japanese? The fact that they aren't in English doesn't mean they all came from Japan. Spanish cards might come from Mexico or Europe, while the Japanese cards would come from Japan. William has quite the collection!

Stop & Think

Designs on archaeological artifacts help us figure out where those artifacts come from. Do you have a T-shirt or sweatshirt with words or designs that tell people where you've been?

Obsidian

Obsidian is a glassy volcanic rock. Many tools in prehistoric North America were made by chipping flakes off rock to make sharp edges. Obsidian is much better for making sharp edges than regular rock because it has been through a heating process. It can make sharper and harder blades than ordinary glass.

Obsidian is found in places that had volcanic activity, and obsidian from different areas has different, tiny amounts of chemicals. We can guess where it came from by examining the chemicals in obsidian, just as we can with the chemicals in copper.

Obsidian sculpture

Obsidian rock from Panum Crater in northeastern California

People can learn about many objects, not just copper or obsidian, based on trace chemicals. For example, the type of paper used in William's trading cards, or the kind of ink used to print his cards might reveal where a card comes from.

Prehistoric North American people living in the Northwest could easily find obsidian. Obsidian came from areas such as Washington, Oregon, Northern California, and western Canada. Obsidian deposits are often in the same areas that have volcanoes. Many of the tallest mountains in the Northwest are volcanoes, such as Mt. Rainier near Seattle, Washington, and Mt. Saint Helens. When a volcano erupts and the conditions are right, lava that cools rapidly can form obsidian.

Mount St. Helens after its 1980 eruption

Obsidian trade

Obsidian was traded all the way across North America, including the United States, Canada, and Mexico. Obsidian artifacts have been found in the United States throughout the Mississippi River Valley. The appearance and trace chemicals in these obsidian artifacts tell us that the obsidian came from northwestern North America.

Shells

Shells from the ocean are beautiful and can be used for many purposes. Humans have used shells for jewelry, as small plates, and even as musical instruments.

At archaeological sites near the ocean, huge piles of shells can be found in trash heaps. Often these piles are the garbage left over after eating the meat in the middle of shellfish. We know that seashells found in the Arizona desert or the upper Mississippi River Valley are not from food, because it would have taken too long to carry shellfish that far inland before it would have become rotten and dangerous to eat.

Professor Bill Rathje, right, studies modern trash heaps to understand more about how humans live today.

A prehistoric shell necklace and other shells that were found at archaeological sites in Arizona

How do we know that some shells found on archaeological sites were used for jewelry? Many of the shells have small holes, usually in the same place. By placing the shells on a string, they could have been made into a necklace.

Also, some people wore jewelry when they were buried. Many people were buried with their valuable possessions. When an archaeological site includes ancient graves, archaeologists sometimes find objects in them that were traded great distances. In undisturbed graves, shells have been found in the pattern of a necklace. The string may be gone, but the shells are in the same place they would have been if there had been a string.

Shells can be helpful in identifying trade connections. Some types of shellfish only live in certain areas. For example, if a type of shell from a shellfish that lived in the Gulf of Mexico is found in Colorado, we know that the people in Colorado traded with someone from near the Gulf of Mexico.

Stop & Think

Many grocery stores have a counter where seafood is sold. Where does the fish you eat come from? Read the labels or ask someone at the seafood counter where the store's fish comes from.

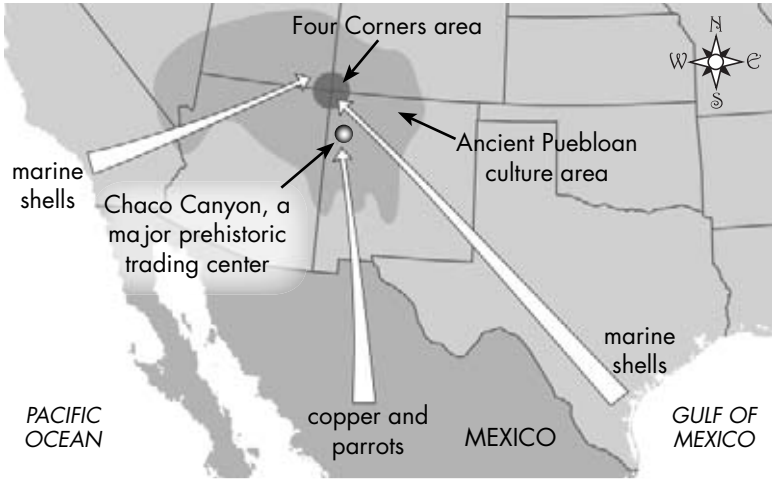
This archaeologist works to uncover the bones of a dog buried in an ancient Israeli cemetery.

Birds and Animals

All over the world, animals are a common trade item. When Europeans first came to North America, they brought horses. Horses can be used for transportation or to pull and carry things. After European contact, many animals became part of **transatlantic trade**. Valuable animals were transported across the Atlantic Ocean.

Sometimes we find the bones of birds and other animals in archaeological sites. The bones of animals that live in the area, particularly those that are used as food, are common. For example, in eastern North America, deer bones are often found at sites where ancient people lived.

Copper, shell, and parrot trade



Sometimes we find the bones of **exotic** animals in an archaeological site. Exotic animals are those that come from a different place. An elephant is an exotic animal in North America, but normal in parts of Africa. Exotic animals are evidence of trade. For an elephant to come to a zoo in North America, it needed to be traded from a faraway place.

Archaeological sites in the Southwest, such as Arizona, sometimes have bones from parrots. Parrots are exotic animals because they ordinarily only live in Central or South America. Archaeologists think these birds were valued for their colorful feathers. Because the remains of birds, such as parrots, are found thousands of miles north of where they usually live, this is evidence of long-distance trade.

Conclusion

In prehistoric North America some people traveled thousands of miles to trade. Many times, traders used boats to travel along rivers or on the coast. For example, the Mississippi River was an important trade route that connected much of North America.

Other times, people had to walk. Crossing mountain ranges like the Rocky or Appalachian mountains could take weeks of difficult walking.

Today, it is easier to transport heavy trade goods long distances. Ships, trucks, trains, and planes are all used to carry trade goods among the countries of the world.

Containers full of trade goods travel by barge.

Trade doesn't require a truck full of valuable objects such as televisions. Trade can occur when one person gives another person something in exchange for something else. Remember how William got his Japanese trading cards?

Next time you take a trip, think about all the things you take with you. Afterward, think about the things you left behind. Did you exchange gifts with someone? Did you buy something you couldn't get at home? That's just what the prehistoric people of the world did.

Germany

Holland

Peru

Mexico

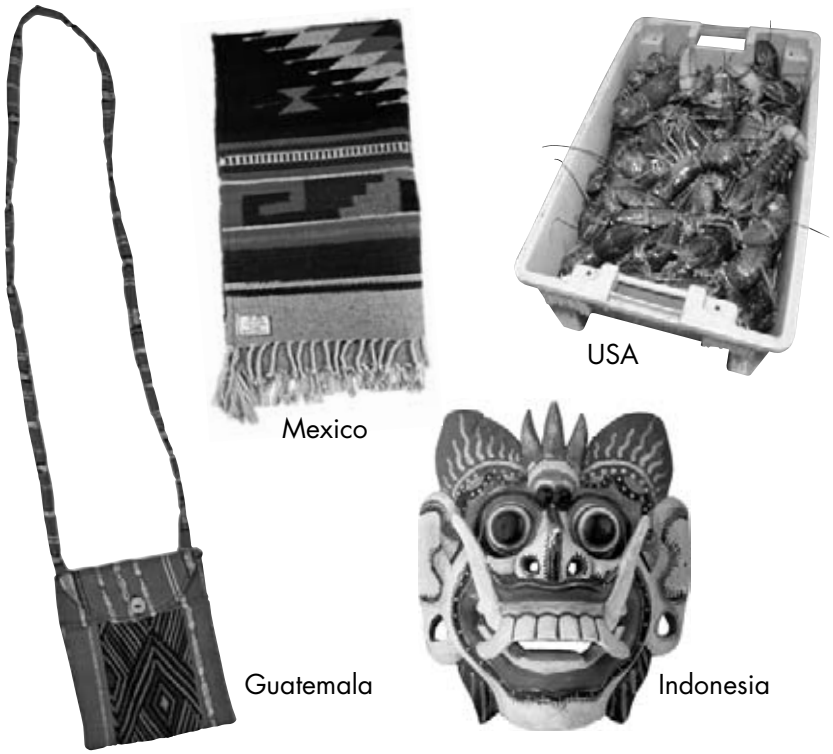
Glossary

archaeological sites places where people have left behind evidence of their lives, such as trash or parts of buildings (p. 9)

archaeology the study of people through the things they leave behind (p. 7)

artifacts objects that have been shaped or changed by people (p. 9)

commodity something that is traded, such as gold or seashells (p. 8)



exotic object or animal that cannot be found locally, and comes from far away (p. 20)

generation the people in a family born around the same time or from parents of the same age (p. 7)

native copper pure, metallic copper (p. 10)

obsidian glassy, volcanic rock (p. 13)

oral tradition the set of stories that one generation tells to the next (p. 7)

ore rock that contains metals (p. 9)

prehistoric period of time before people made written records, like books (p. 6)

smelting the use of extreme heat to separate metal from the ore containing that metal (p. 9)

trade the exchange of one thing for another (p. 5)

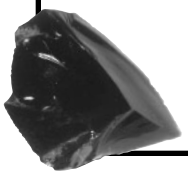
transatlantic trade trade between groups of people living on opposite sides of the Atlantic Ocean (p. 19)

Name _____

Instructions: As you read, identify the main idea and supporting details for one of the sections in the book *Prehistoric Trade*. Write the information on the lines provided below. Then use the information you've collected to write a short summary of the section.

Main Idea	Details
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Summary



PREHISTORIC TRADE • LEVEL V • 1

SKILL: MAIN IDEAS AND DETAILS / SUMMARY

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Name _____

Instructions: Read the sentences below. Then identify the independent clause, the dependent clause, and the conjunction. Write them on the lines provided.

1. If archaeologists find seashells in a village, they know the village traded with people who lived near the ocean.

   Independent clause: _____

   Dependent clause: _____

   Conjunction: _____

2. As archaeologists study what people left behind, they find out more about prehistoric times.

   Independent clause: _____

   Dependent clause: _____

   Conjunction: _____

3. It was hard for prehistoric people to make metal because metal is often mixed up in rock.

   Independent clause: _____

   Dependent clause: _____

   Conjunction: _____

4. Since the shells had small holes, they could be placed on a string and made into a necklace.

   Independent clause: _____

   Dependent clause: _____

   Conjunction: _____

5. The shells were in the same place they would have been if there had been a string.

   Independent clause: _____

   Dependent clause: _____

   Conjunction: _____

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Name _____

Instructions: Write one sentence for each pair of homophones. Use each homophone once within the sentence. You may add suffixes such as *-ed*, *-s*, or *-ing* to the homophones to help make them fit in the sentence.

Example:

(where/wear) Where would I ever wear such a horrible outfit?

1. (eight/ate) _____
2. (plane/plain) _____
3. (in/inn) _____
4. (flew/flu) _____
5. (red/read) _____
6. (cent/sent) _____
7. (knew/new) _____
8. (two/too) _____
9. (their/there) _____
10. (hair/hare) _____

PREHISTORIC TRADE • LEVEL V • 3

SKILL: HOMOPHONES

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The Battle of the Alamo

A Reading A–Z Level V Leveled Reader
Word Count: 1,909

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Written by David L. Dreier • Illustrated by Cende Hill

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Correlation

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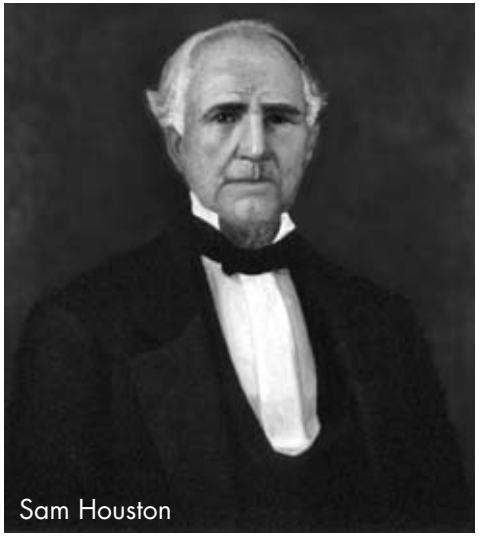
Sam Houston

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✯ Sacred Ground ✯

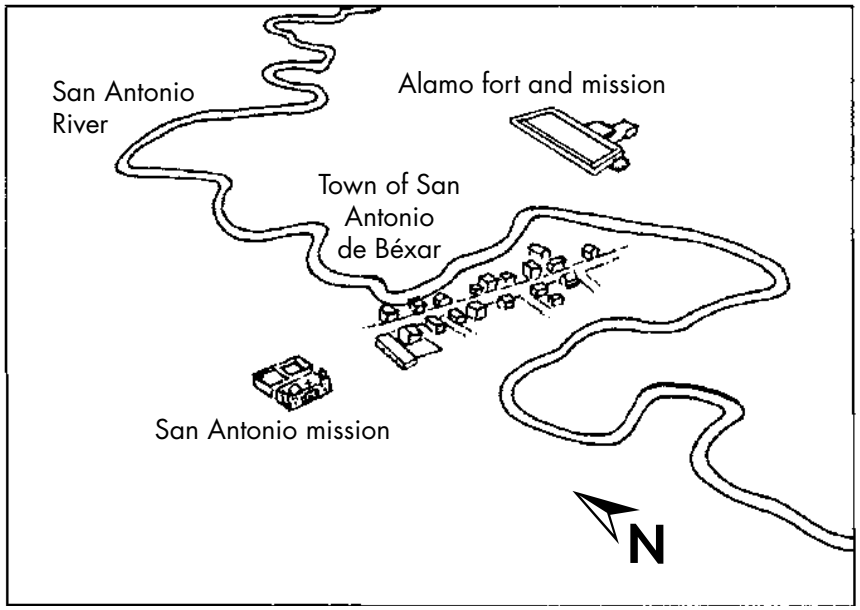
The Alamo is one of the most honored places in Texas. This cream-colored stone building in the city of San Antonio was once a chapel. It is the main remaining section of a Catholic **mission** that was turned into a military fort. Its quiet interior still feels like the inside of a church. Visitors speak softly. Their voices and footsteps echo slightly from the stone walls and floors.

It's hard to imagine that this place was once filled with the sounds of cannons, gunfire, and the screams of men. Or that it ran with blood. But it did.

✯ From Mission to Fort ✯

The Alamo was built in the 1720s as one of five missions constructed by Spanish missionaries in a settlement called San Antonio de Bexar. In the early 1700s, parts of Texas and Mexico were ruled by Spain.

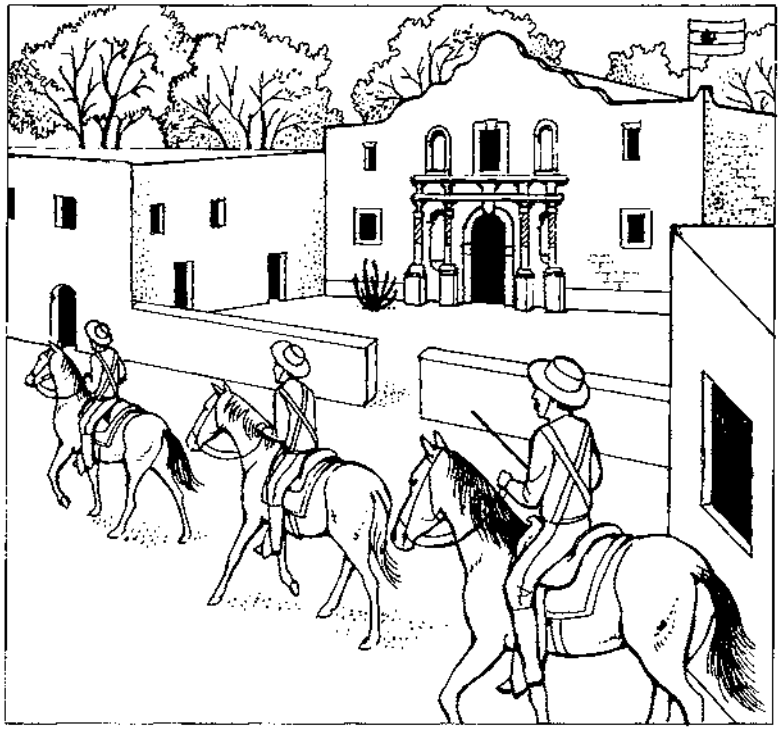
The Alamo was originally called Mission San Antonio de Valero. It consisted of the chapel and a number of smaller buildings. The buildings, and the walls connecting them, surrounded a large **compound**. For about 70 years, Mission San Antonio de Valero and the other missions taught Native Americans about Christianity.

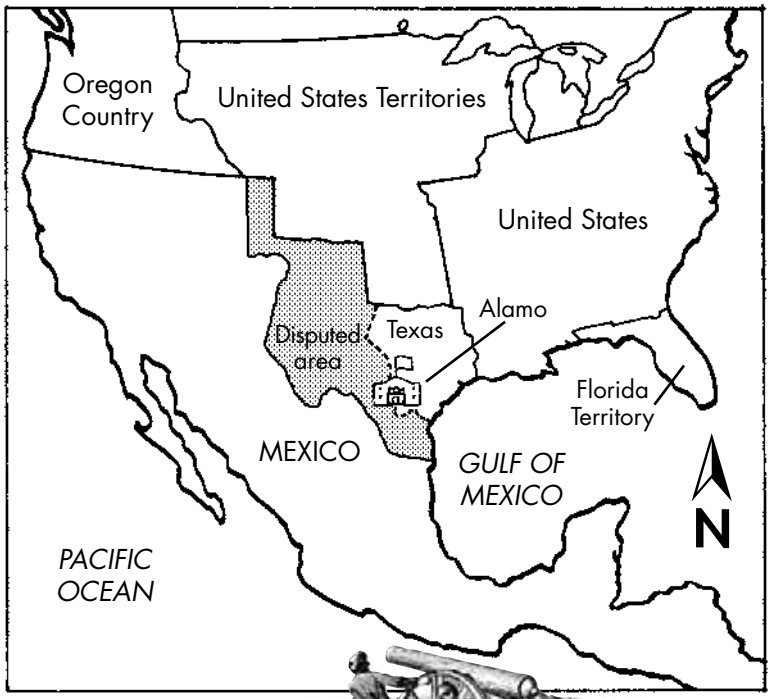


The period of the missionaries came to an end in 1793. That year, the Spanish government took control of the missions and gave the lands surrounding them back to the Native Americans.

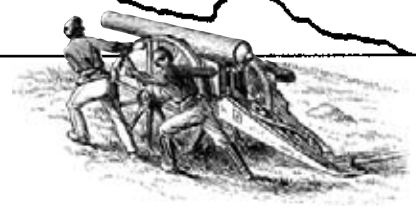
The Spanish began using Mission San Antonio de Valero as a military post for a **cavalry** unit.

The soldiers at the post renamed the former mission the Alamo. *Alamo* is the Spanish word for cottonwood. Cottonwood trees grew wild in the area around the mission. From then on, everyone called the old mission the Alamo.





Map of United States and Mexico circa 1833



✯ The Texas Revolution Begins ✯

Mexico won its independence from Spain in 1821. The Mexican government thought Texas, which was a large area with a small population, needed more people living in its land. It invited Americans to settle in Texas by offering them land at low prices. Many people moved from the United States to Texas for the cheap land. The settlers became known as Texians.

By the 1830s, there were more than 25,000 settlers in Texas, which began to worry the Mexican government. There were now far more Texians than Mexicans living in Texas. The government of Mexico feared that Texas might try to break free of Mexican rule. In 1830, it tried to stop further settlement in Texas. That caused **hostility** between the Texians and the Mexican troops stationed in Texas.

Shortly thereafter, a group of Texians came together to lead the Texian struggle for independence. They recruited an army and appointed a man named Sam Houston as its commander. They also elected a governor, Henry Smith. The Texians decided to revolt and rid themselves of Mexican rule.

The Texas Revolution began as part of a larger civil war in Mexico between two rival groups, the Centralists and the Federalists. The Centralists believed that all of Mexico should be ruled by a strong central government. The Federalists favored having Mexican states, including Texas, control their own affairs. The Texians sided with the Federalists. However, by 1835, the Centralists were running things. If the Federalists had prevailed, there might not have been a Texas Revolution.

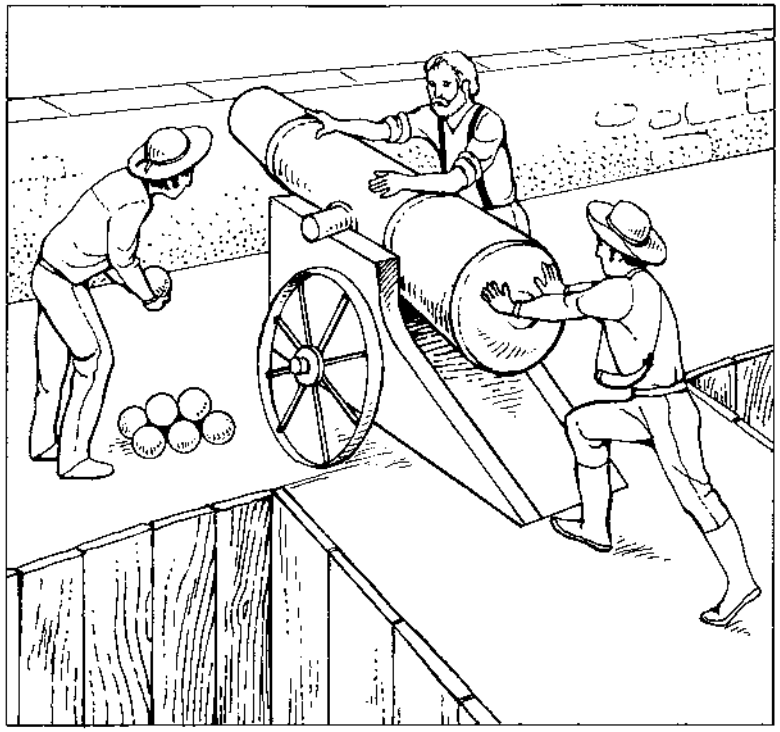
✯ Santa Anna Marches ✯

The president of Mexico at that time was General Antonio Lopéz de Santa Anna. He was the leader of the Centralists. Santa Anna believed that people in all parts of Mexico should do what the government told them to do.

Santa Anna decided that he was not going to let the Texians get away with their rebellious behavior. He vowed that he would crush the uprising and restore the Mexican government's control of Texas.

Santa Anna led the fight against the Texian revolt.

In February of 1836, Santa Anna led an army of more than 6,000 soldiers to the Rio Grande, a river in south Texas. The army then marched straight toward San Antonio.

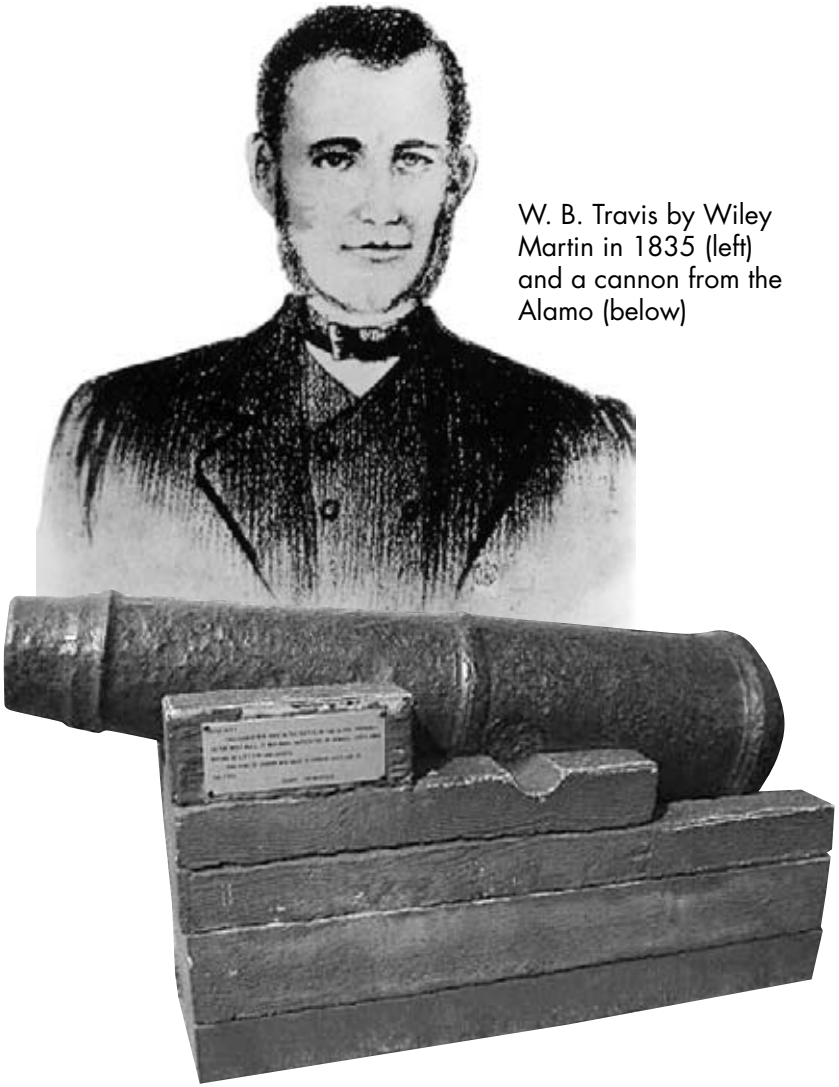


Even before Santa Anna crossed the Rio Grande, the Texians learned that he was coming to attack. Texian forces controlled San Antonio under the command of Lieutenant Colonel James C. Neill.

Colonel Neill had been working to build up the defenses of the Alamo because the old mission was in ruins due to years of neglect.

Neill ordered the walls strengthened and cannons mounted on top. As Santa Anna advanced toward San Antonio, Texian Governor Smith ordered Neill to hold the Alamo at all costs.

In mid-February, however, Colonel Neill left the Alamo. He had received an urgent message informing him of an illness in his family. Before leaving, he turned command of the Alamo over to another officer: William Barret Travis.



W. B. Travis by Wiley Martin in 1835 (left) and a cannon from the Alamo (below)

✯ Travis, Bowie, Crockett ✯

Travis—just 26 years old—had studied law in Alabama and been an officer in the Alabama **Militia**. He moved to Texas in 1831, opening a law office in the town of Anahuac (a-NAH-wak). He became involved in the Texas fight for independence and was appointed a lieutenant colonel in the Texas army.

James Bowie and the knife he designed

James Bowie was a hard-fighting, 39-year-old adventurer. He had lived in Louisiana before moving to Texas around 1820. Bowie was renowned as a knife fighter. In fact, he designed a knife known as the Bowie knife. He commanded a group of volunteers at the Alamo and was looking forward to doing battle with Santa Anna.

David or Davy?

David Crockett didn't wear a coonskin cap and he never called himself Davy. Plenty of other people called him Davy, though. In addition to being a member of Congress, Crockett was a genuine folk hero. People far and wide heard about his exploits as a frontiersman. To them he was Davy Crockett.

Perhaps the best-known Alamo defender was David Crockett. Crockett was a famous 49-year-old frontiersman and a former U.S. congressman from Tennessee. He had departed for Texas in late 1835 after failing to win reelection to a fourth term in the U.S. Congress.

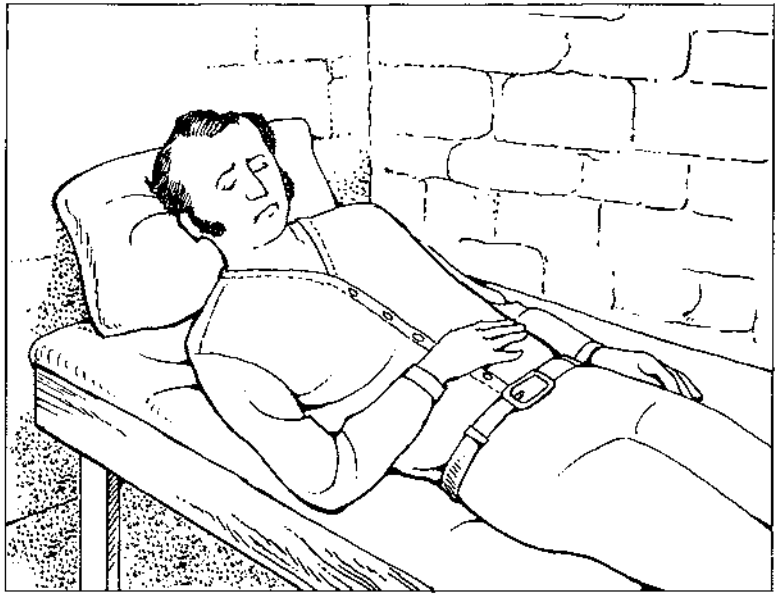
Crockett hadn't intended to take part in the Texas Revolution. He just wanted to see if Texas would be a good place to live, but after he got to Texas, he changed his mind and enrolled as a volunteer soldier. He arrived at the Alamo in early February with 12 other men.

✯ The Siege ✯

Santa Anna arrived in San Antonio with his army on February 23rd. He demanded the immediate surrender of the Alamo. Travis answered by firing a cannonball at the Mexican lines. Santa Anna was outraged. He vowed that all of the men in the Alamo would die.

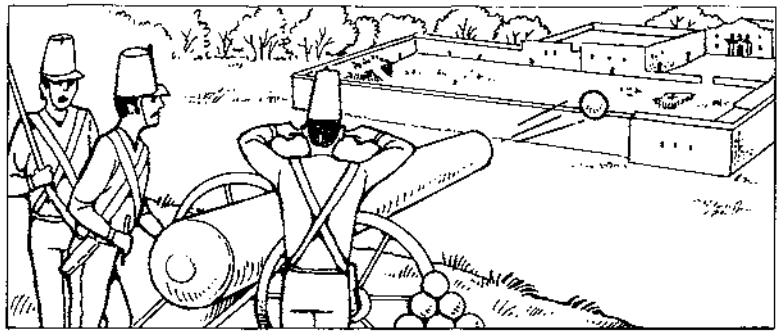
Mexican artillery began to bombard the fort. Santa Anna wanted to smash down the walls.

Early in the **siege**, Bowie became very ill, probably with a sickness called **typhoid**. He was confined to a cot in a small room next to the main gate. Travis then took full command.



Travis wrote to the Texian government describing the bombardment and asking for help. He told the Texian leaders about Santa Anna's vow to kill all the Alamo defenders. Travis promised that whatever happened, "I shall never surrender or retreat."

Day after day, the Mexican cannons blasted away at the Alamo walls, and night after night, the defenders worked to repair the damage.



During the siege, other Texians joined the Alamo defenders. The total number of men in the Alamo is uncertain. The longstanding official number was 189, but historians now think there may have been as many as 250 defenders in the Alamo at the time of the final attack, including a group of women and children.

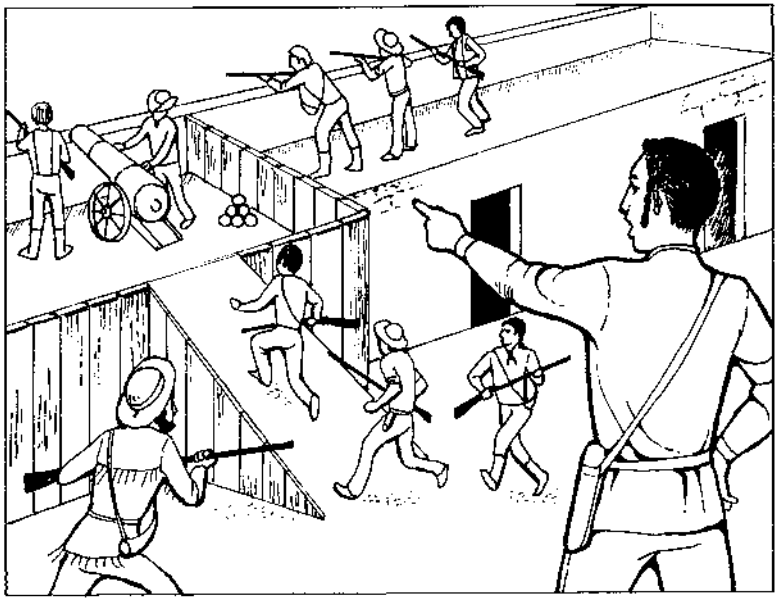
Travis continued to hope that help would arrive, but none came. Bowie's illness worsened.

✯ The Battle ✯

Before dawn on the 13th day of the siege, March 6th, Santa Anna launched an all-out attack. About 1,800 Mexican troops advanced through the darkness, many carrying ladders for climbing the walls of the fort.

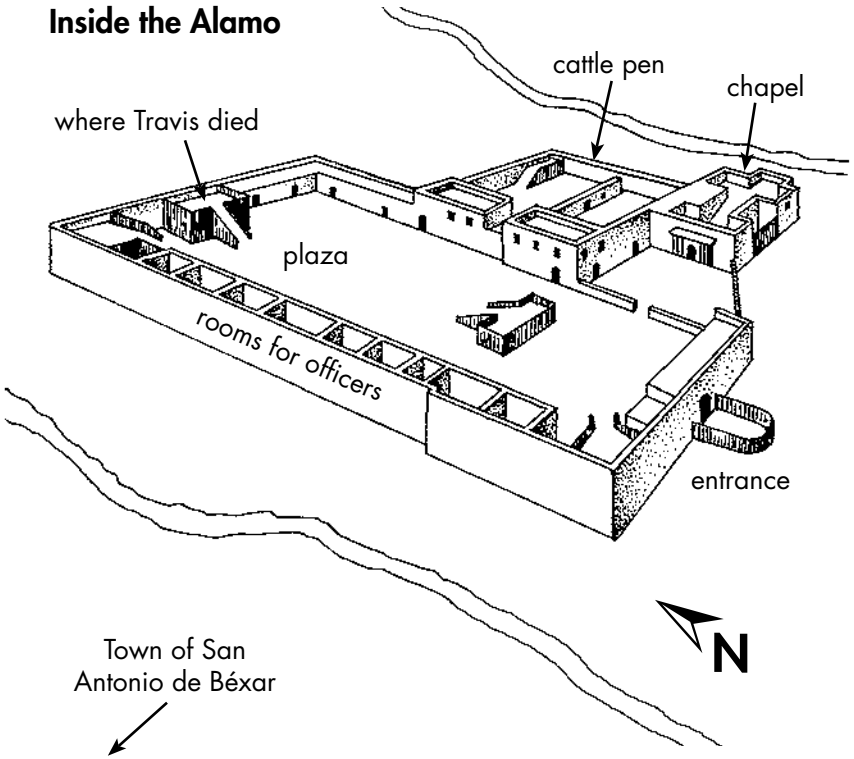
One of Travis's officers rushed into the commander's room to wake him. "The Mexicans are coming!" he yelled.

Travis jumped off his cot and ran to the north wall of the Alamo. All through the fort, the defenders were taking up positions and firing rounds at the Mexican troops.



The Texians fought bravely, but they could not stop the attack—one after another, they began to fall. Travis was one of the first defenders to die, hit in the head by a musket ball.

Inside the Alamo



Soon the Mexican troops were streaming over the walls. Some of the remaining defenders retreated to either the chapel or the long **barracks**, while others left the Alamo and fought outside the walls. The fighting became brutal hand-to-hand combat.

Mexican soldiers surged through the Alamo compound and surrounding rooms, finding Bowie lying on his cot. One soldier shot Bowie in the head, and several others plunged him with their **bayonets**.

It is not known how or where Crockett died. Some historians think he may have been killed in the chapel, while others think he was captured with several other defenders at the end of the battle and immediately executed.

When the sun rose, the Alamo was quiet. The battle had lasted just 90 minutes. The Alamo's women and children, and a slave who had been owned by Travis, were the only Texian survivors. Santa Anna allowed them to leave.

Soon after the battle, Santa Anna ordered his men to stack the bodies of the Alamo defenders into three large piles and burn them.

Santa Anna had triumphed, but the battle had been costly for him. About 600 of his soldiers were dead or wounded, and he still hadn't ended the Texas Revolution.

This famous painting shows what the Battle of the Alamo might have looked like on the morning of March 6.

✯ The Defeat of Santa Anna ✯

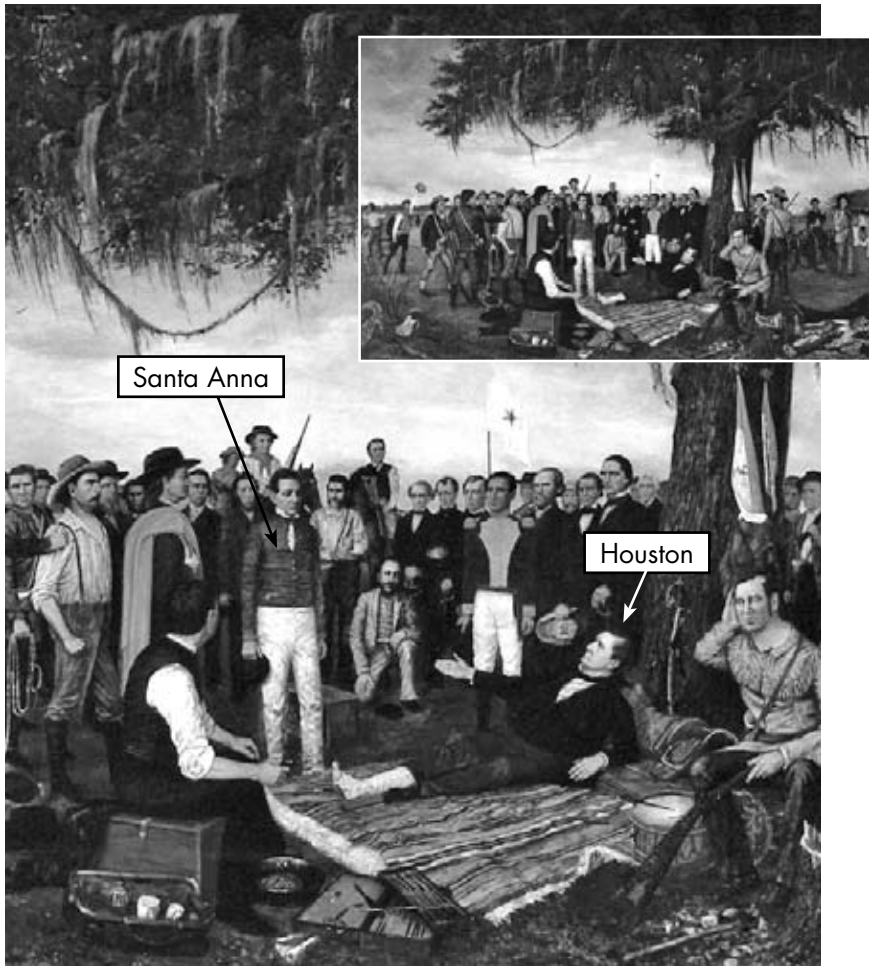
During the siege, the Texian leaders had declared Texas to be independent of Mexico.

Santa Anna set out to locate and fight the main Texian army, which was led by Sam Houston. The Texian army numbered about 900 men east of San Antonio. Santa Anna felt certain that he would have no trouble winning a quick victory against them.

Houston knew that losing his army to Santa Anna would be the end of the revolution. So he slowly retreated eastward, refusing to meet the Mexican general in battle.

Santa Anna was so confident about beating the Texians that he became careless. On April 21, his army was resting near the San Jacinto (ha-SEEN-toh) River. Santa Anna knew Houston's army was nearby, but he didn't worry about it. He was sure the Texians wouldn't even think of attacking him.

Houston decided that the time for action had arrived. He ordered his army to make a surprise attack against Santa Anna. In the Battle of San Jacinto, the Texians defeated the Mexican army. Nearly every Mexican soldier was killed or taken prisoner.



This painting shows the surrender of Santa Anna to Houston at San Jacinto.

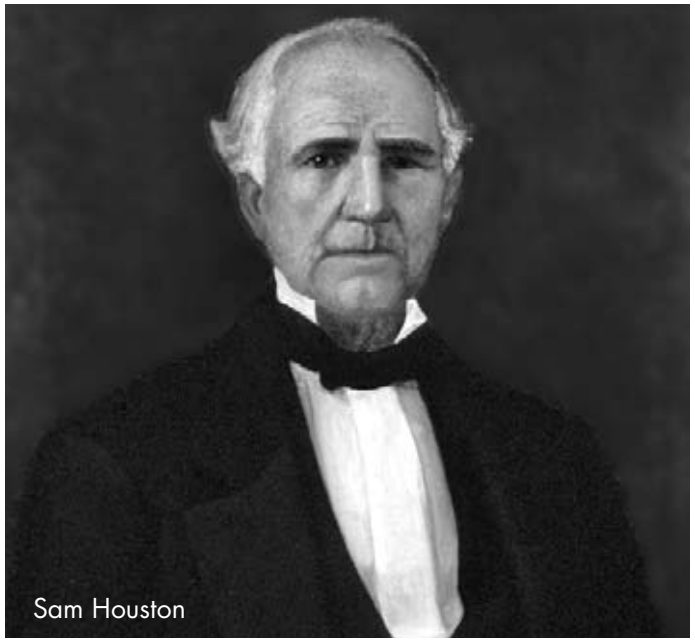
Santa Anna escaped but was captured the next day. The Texians brought him to face General Houston. Santa Anna agreed to take his remaining men back to Mexico and to grant Texas its independence.

✯ The Republic of Texas ✯

For nine years, Texas was an independent nation, the Republic of Texas, and Sam Houston served twice as its president.

The republic, however, had many problems. It had little money, and it continued to have trouble with Mexico. Most people in Texas thought that Texas should be part of the United States.

In 1845, the U.S. Congress voted to make Texas a member of the Union, and in December of that year, Texas became the 28th state of the United States.



Sam Houston

✯ Remember the Alamo ✯

For years after the 1836 battle, the Alamo lay in ruins. In 1846, after Texas became a state, the U.S. army began using the Alamo. It repaired the chapel walls and put a new roof on it, adding the now-familiar top to the chapel's damaged **facade**.

In the late 1800s, the army established a new post in San Antonio—Fort Sam Houston. The Alamo and surrounding grounds were later acquired by the state of Texas.

For years, the Alamo has been maintained by the Daughters of the Republic of Texas. They preserve it as a historic shrine with landscaped gardens and a museum as a way to remember the brave men who lost their lives there.

✯ Glossary ✯

barracks army buildings where soldiers live (p. 17)

bayonets long, steel blades attached to the ends of rifles (p. 18)

cavalry soldiers on horseback (p. 6)

compound a walled-off area containing a group of buildings (p. 5)

facade the front, or face, of a building (p. 23)

hostility deep-seated anger (p. 8)

militia an army composed of ordinary citizens instead of trained soldiers (p. 12)

mission a place where Christians work to spread their faith to others in the area (p. 4)

siege a military tactic where soldiers surround and control the area around the enemy's fort (p. 14)

typhoid an infectious disease that causes a high fever (p. 14)

Name _____

Instructions: Write a vocabulary word in each *Word Box*. Write a definition for each word in the appropriate boxes. Then use each word in a sentence.

1

Word Box

Definition

Sentence

2

Word Box

Definition

Sentence

3

Word Box

Definition

Sentence

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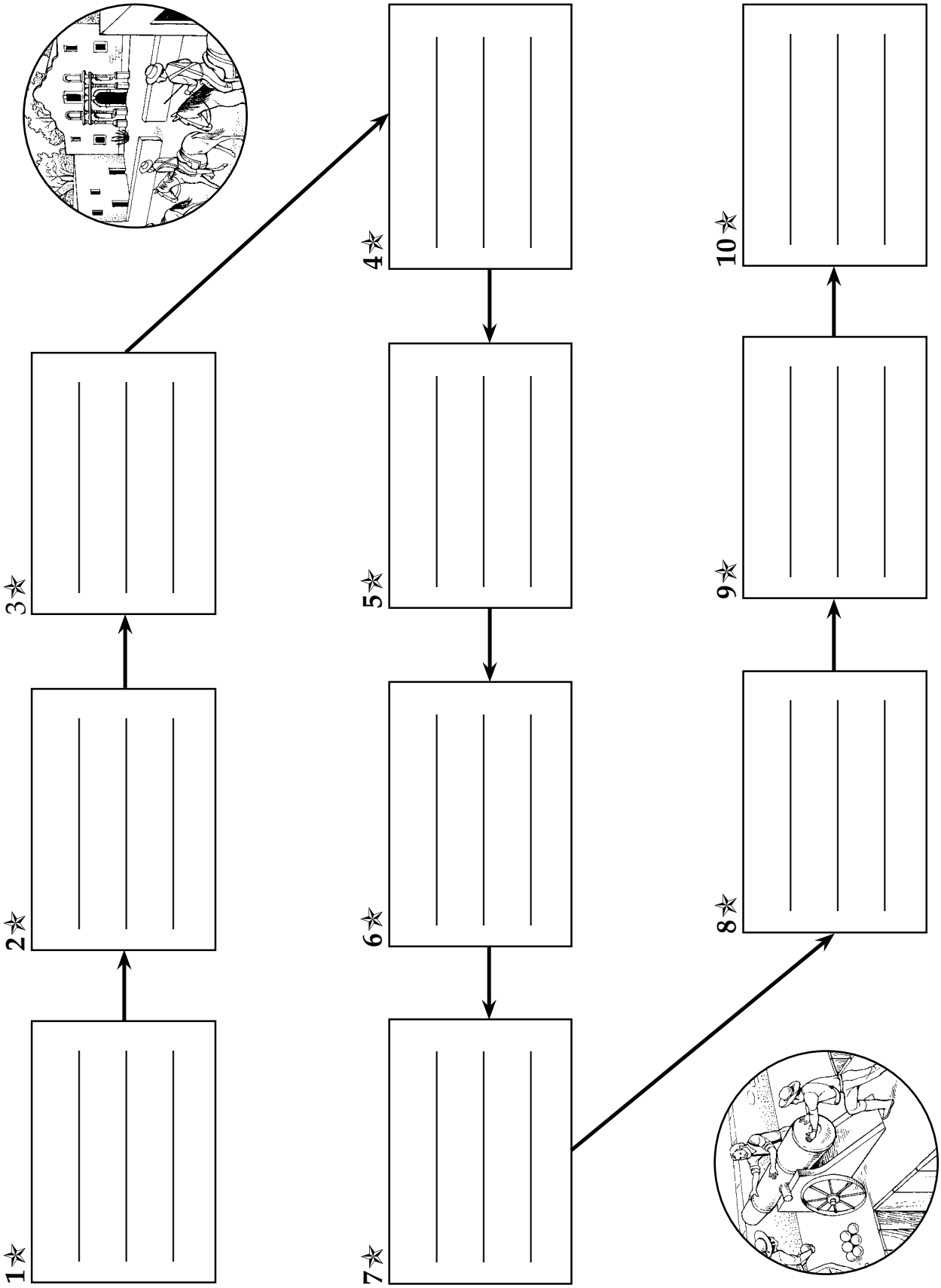
Name _____

Reading a-z

Instructions: Write what happened in the book in the order in which it happened.



THE BATTLE OF THE ALAMO • LEVEL V • 2

SKILL: CAUSE AND EFFECT

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Name _____

Instructions: Read the sentences below. Then identify the independent clause, the dependent clause, and the conjunction, writing them on the lines provided.

1. **Colonel Neill worked to build up the Alamo defenses because it was in ruins.**

   Independent clause: _____

   Dependent clause: _____

   Conjunction: _____

2. **David Crockett departed for Texas after failing to win reelection to the U.S. Congress.**

   Independent clause: _____

   Dependent clause: _____

   Conjunction: _____

3. **Some of the defenders retreated while other left the Alamo.**

   Independent clause: _____

   Dependent clause: _____

   Conjunction: _____

4. **Although Santa Anna won the battle, he still hadn't ended the Texas Revolution.**

   Independent clause: _____

   Dependent clause: _____

   Conjunction: _____

5. **If the Federalists had prevailed, there might not have been a Texas Revolution.**

   Independent clause: _____

   Dependent clause: _____

   Subordinating conjunction: _____

6. **Before Santa Anna crossed the Rio Grande, the Texians learned that he was coming to attack.**

   Independent clause: _____

   Dependent clause: _____

   Subordinating conjunction: _____

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Alternative Fuel Cars

A Reading A–Z Level V Leveled Reader

Word Count: 1,866

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LEVELED READER • V

Alternative Fuel Cars

Written by Ned Jensen

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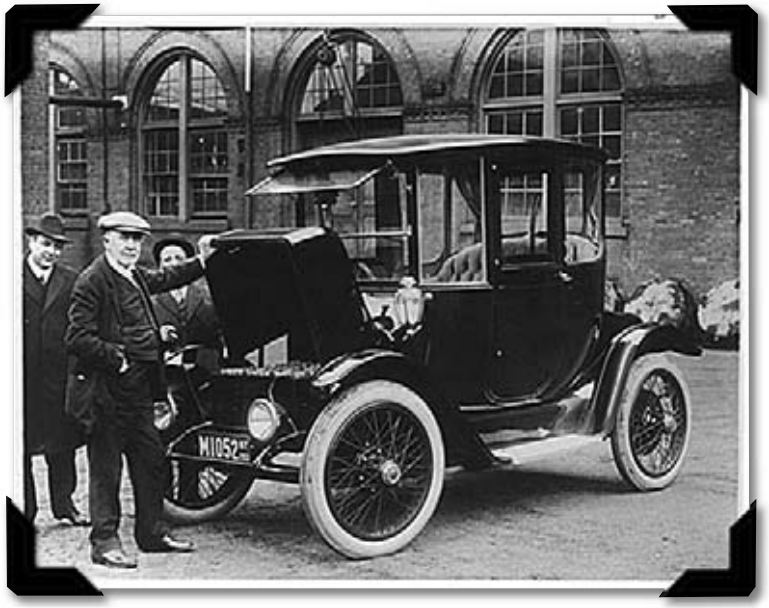
Alternative Fuel Cars



Written by Ned Jensen

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Introduction

Every day, people around the world burn huge amounts of gasoline as they drive their cars and trucks. As a matter of fact, in 2005, more than 870 million gallons of gasoline were burned. In the United States alone, people burned more than 380 million gallons, or 44 percent, of the amount of gasoline burned in the world. Year after year, the amount of gasoline people consume just keeps increasing.

But this gas-guzzling appetite can't last forever. The world's supply of gasoline is limited. Someday we will run out of the oil that is used to make gasoline. By some estimates, the world only has about 120 years of oil left. Some oil-supply experts estimate that after about 2050, oil production will begin dropping, and by 2125 oil will be scarce.

Think About It

If you were 10 years old in 2006, by the time you are 60 and it is 2056, you will begin experiencing fuel shortages. If you have children, by the time they are 60 years old, oil for making gasoline will be in short supply.

Running out of gasoline is not the only problem our gas-guzzling appetites cause. The gasoline we burn to drive our cars and trucks releases **pollutants** into the air. Most scientists believe these pollutants trap excess heat near Earth's surface. This heat is the major cause of global warming, which is slowly heating up Earth's atmosphere, changing weather patterns and melting Earth's ice sheets and glaciers.

Earth's ice sheets and glaciers are slowly melting.

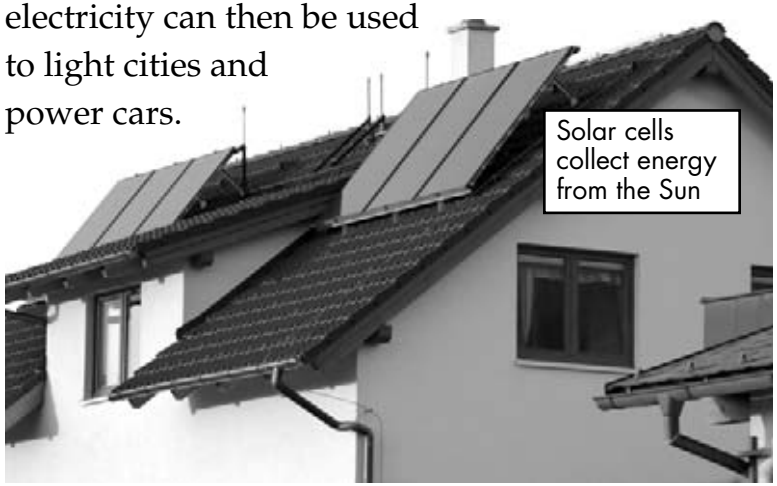
This does not paint a very bright picture for people driving gasoline-powered cars. So inventors, with an eye toward solving the present-day problem of global warming and the future problem of running out of oil, are looking for new ways to power cars and trucks. They are looking for **alternative fuels** and inventing cars that can run on these fuels. This book is about possible fuels of the future and vehicles that can use these fuels.

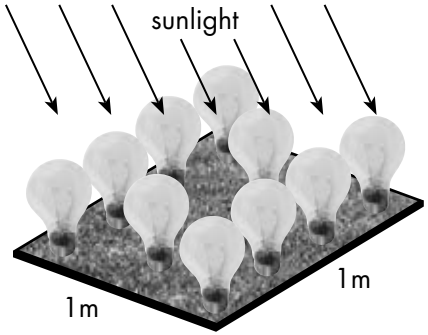
Solar-Powered Cars

Most of the energy we use comes from the big star in our sky—the Sun. Even coal and oil, because they formed from things that were once living, got their energy from the Sun. When we burn coal, oil, and gasoline made from oil, we are actually releasing energy from the Sun—energy that has been stored in these fuels for long periods of time. It is also important to know that it took millions of years for coal and oil to form. For this reason, once these fuels are used up, supplies cannot be replaced quickly.

Coal mining in Virginia

Scientists have found a way to change **radiant** energy from the Sun directly into electricity. That's right—electricity can be made from sunlight. This electricity can then be used to light cities and power cars.


Solar cells collect energy from the Sun



Do You Know?

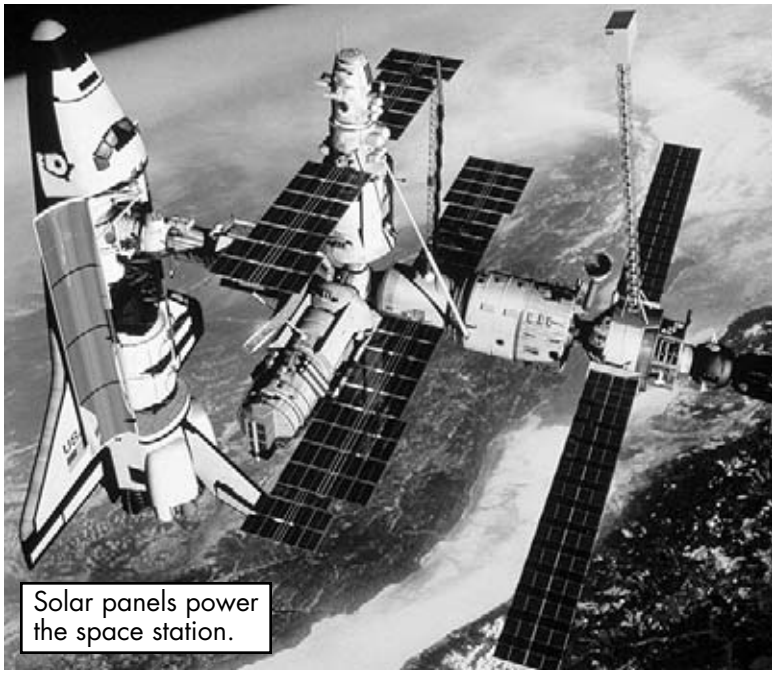
The sunlight falling on just one square meter of land can produce enough electricity each day to light ten 100-watt lightbulbs.

All of this is possible because of **solar cells**. You have probably seen solar cells on calculators. They are also used to supply electricity to spacecraft and to devices found where no source of electricity exists. Solar cells do not get used up as batteries do. Instead, they keep on supplying electricity as long as there is light energy for the cells to absorb.

A group of solar cells placed together is a solar panel. Solar panels are placed on the roofs of buildings. They can also be attached to satellites and space stations. A solar-powered car is covered with solar panels. All these panels produce enough electricity to run a special motor in a solar car, light homes, and supply a space station with all its energy. And all of this energy comes without releasing pollutants into the air.

Do You Know?

The most common solar cells are made from one of Earth's natural elements. The element, silicon, is the same element that makes up sand.


Solar panels power the space station.

Scientists are working on inexpensive ways to convert sunlight to electricity.

So why aren't we powering all of our cars with solar cells, you may ask? The first reason is the cost of manufacturing solar cells. Scientists have not found a way to inexpensively manufacture solar cells that can produce adequate amounts of electricity. So while sunlight as a fuel is free, the cost of manufacturing the solar cells to convert this free energy to electricity offsets the savings.

Math Minute

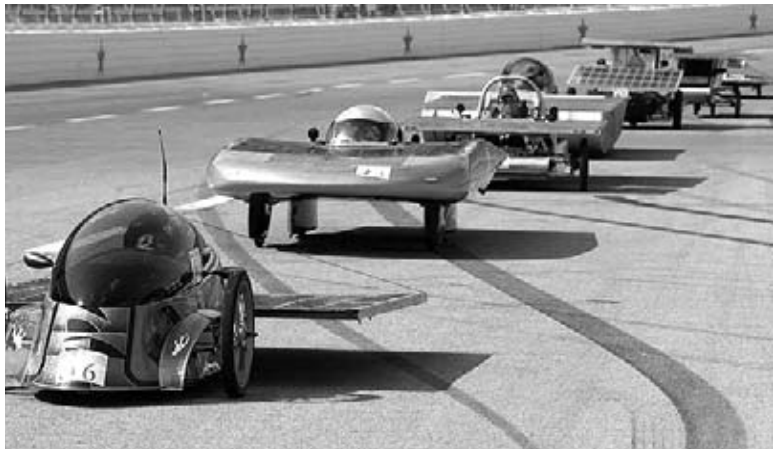
The fuel used to power Car A is made up of 90% nonrenewable gasoline and 10% renewable ethanol. The car's gas tank holds 20 gallons of fuel. The fuel used to power Car B is 100% nonrenewable gasoline. It also has a 20-gallon tank. How much nonrenewable gasoline is saved with each tank of fuel in Car A when compared to Car B?

Answer: 2 gallons

Energy output is another issue. While newer solar cells produce far more energy than the first models did, they still cannot equal the energy produced by burning gasoline in an engine. The top speed of a typical solar-powered car is about 40 mph (64 km/hr). Even then, it takes hundreds of solar cells to generate enough electrical power to reach this speed.

Then, of course, there is the issue of night driving and low-sunlight days. For cars to operate around the clock, there has to be a way of storing the energy produced during daylight hours for use when there is no sunlight. Or there has to be a backup power supply.

Nighttime and cloudy days are times that solar panels wouldn't work.



In time, all these problems may be solved, and with oil supplies diminishing, you can safely bet that an army of scientists is working on solving these problems. In fact, every year, teams of students from colleges in the United States and Canada compete in a North American race of solar-powered cars. It is events like these that continue to push advances in solar-cell technology.

Hydrogen-Powered Cars

Elements are simple substances from which all things on Earth are made. There are just 92 natural elements, and they combine to make thousands of other substances such as water, plastic, and sugar. **Hydrogen** is both the lightest and the most abundant of these 92 elements. As a pure element, it exists as a **gaseous** state of matter. You cannot see it, and it has no odor.

Hydrogen is one of two elements that make up water, and we all know how abundant water is, since it covers almost 75 percent of Earth's surface. It is also found in all living things, including plants and animals, as well as the remains of all living things.

Hydrogen reacts, or combines well, with other elements to make new substances. When it combines with other elements, it releases energy. It is the energy that hydrogen reactions release that has scientists so excited.

In the future, we may fill up our cars with hydrogen gas instead of gasoline.

Scientists imagine someday filling car gas tanks with hydrogen gas instead of liquid gasoline. But hydrogen is not found in a pure form on Earth. So where will we get this hydrogen? Well, one of the most obvious places is from water.

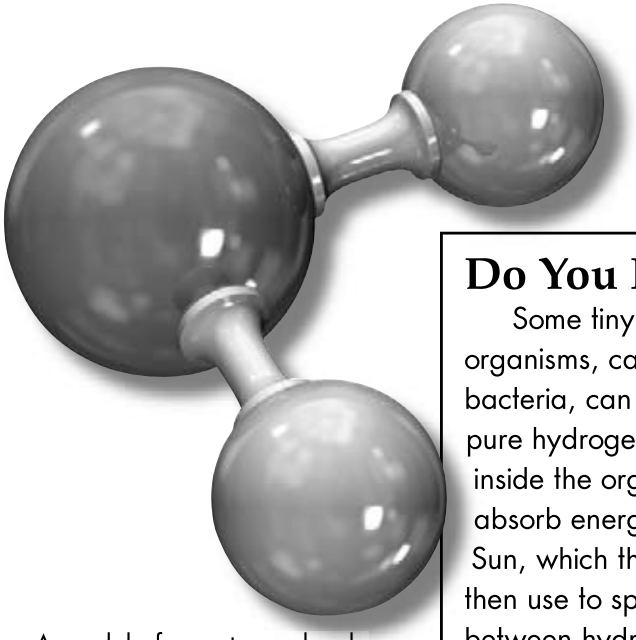
Water is made up of two elements, oxygen and hydrogen. All elements are made of tiny particles called **atoms**. Atoms of hydrogen and oxygen are held together by a chemical **bond** that makes a new substance—water. Breaking these bonds produces pure hydrogen and oxygen. The hydrogen can then be used as a fuel.

There are several ways to break the bond between hydrogen and oxygen atoms in water. One way is to use a charge of electrical energy to break the bond. Another way is to use extreme heat.

Other substances like methane, a natural gas, are made of hydrogen along with oxygen and another element called carbon. Heat from steam can break the bond between hydrogen atoms and the atoms of carbon and oxygen. This also produces pure hydrogen.

Once you have pure hydrogen, you can use it to power cars and trucks. Pure hydrogen is used in one of two ways. One way is to burn it in an engine in much the same way that cars burn gas. The other way is to use it to make electricity that can then power vehicles. Electric cars that use hydrogen have **fuel cells** that make electricity. These fuel cells are somewhat like batteries.

General Motors hydrogen-powered concept car



A model of a water molecule showing two hydrogen atoms joined to one oxygen atom

Do You Know?

Some tiny invisible organisms, called bacteria, can produce pure hydrogen. Chemicals inside the organisms absorb energy from the Sun, which the organisms then use to split the bond between hydrogen and oxygen in water.

In a fuel cell, hydrogen is combined with oxygen to form water. When the two elements join together, they release energy in the form of electricity. This energy can then be used to power all kinds of vehicles.

No matter how hydrogen is used, it is combined with oxygen to release its energy and pure water is the only waste product. Since water is not a pollutant, it does not harm the environment. This fact along with the abundance of water on Earth makes hydrogen a great alternative fuel although a lot more research is needed to make it work well.

Battery-Powered Cars

Scientists are currently working on cars that are powered entirely by rechargeable chemical batteries. If you look under the hood of one of these cars, you will find an electric motor. Under the hood of a gasoline-powered car, you will find the hoses that carry water to cool an engine and exhaust pipes that carry away waste products. By contrast, there is a mass of wires under the hood of an electric car. In an electric car, there is no need to cool the engine and there are no exhaust gases produced that pollute the air.

The engine of a standard gasoline-powered car

Instead of driving your car up to a gas pump to fill the tank with gasoline, you simply plug your battery-powered car into an outlet to recharge the car's batteries. And instead of a fuel bill, you pay an electric bill.

Under the hood of a hybrid gasoline-electric Saturn VUE

Hybrid cars have an electric motor and a small gasoline engine. They both provide kinds of power to run a car. The electric motor runs on batteries, but the motor has the ability to draw electricity from the batteries as well as to put electricity back into the batteries. This means the batteries do not have to be plugged into an electrical source for recharging. The electric motor, when not powering the car, is putting energy back into the batteries.

The GM Volt, an electric hybrid vehicle that would get 150 miles per gallon

Math Minute

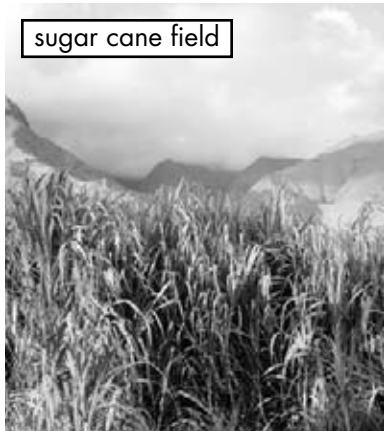
Gasoline costs $2.75 a gallon. Connor drives an SUV that gets 12 miles per gallon. Each week he drives 120 miles. Sara drives a hybrid car that gets 40 miles per gallon of gasoline. She also drives 120 miles each week. How much more does Connor spend for gas each week than Sara does?

Answer: $19.25

An advertisement for an electric car that was available in 1910

Do You Know?

Alternative-fuel vehicles are nothing new. Starting in the 1830s, the first battery-powered vehicles were being produced alongside steam-powered vehicles and gas-electric hybrids. According to a poll from 1900, electric cars were actually preferred by drivers because they ran more cleanly and more safely than their gasoline-powered counterparts. However, technological innovations with gasoline-powered cars, which could be made more cheaply than their electric or hybrid counterparts, made these cars the cars of choice for drivers by the 1920s. Many companies stopped producing alternative-fuel vehicles until a gas shortage in the 1970s brought renewed interest in them.



Ethanol can be made from grain crops.

Ethanol-Powered Cars

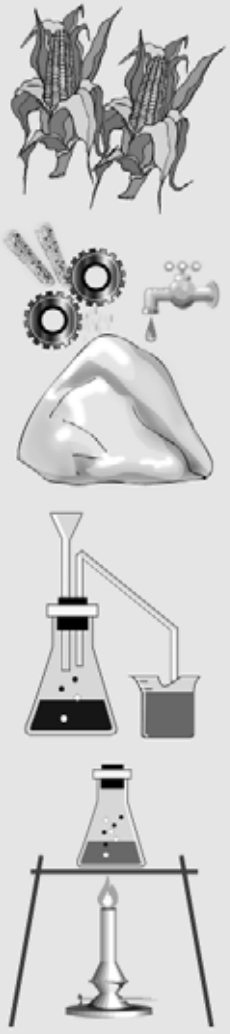
Ethanol is an alternative fuel that is gaining popularity in many places around the world. What makes ethanol so popular is that it is a **renewable resource**. Fuels like coal and oil cannot be renewed. Once they are used up, they are gone forever.

Ethanol can be made from plant and animal material. Most ethanol is made from grain crops like corn, barley, and sorghum. Ethanol is also made from potatoes and sugar cane. But it can also be made from ground-up wood and other plant and animal materials. So, if we want to produce more ethanol, we just have to plant more crops like corn and sugar cane. In a matter of months, the crop has grown, can be harvested, and then used to make ethanol.

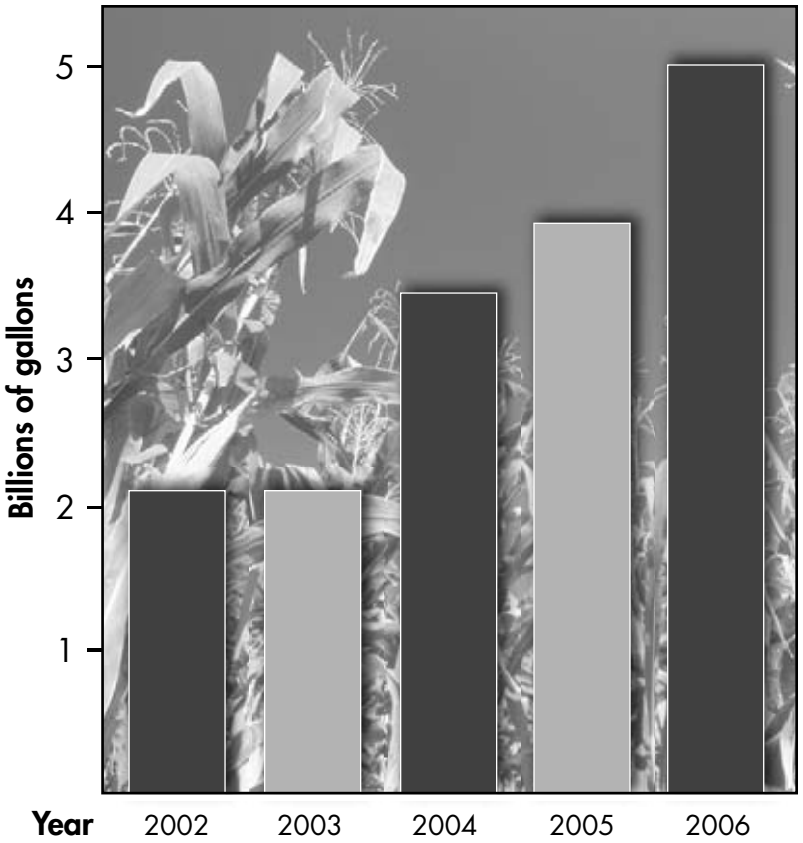
To make ethanol from **biomass** means changing the plant matter into sugar. The sugar is then changed to alcohol in a process called **fermentation**. The diagram below shows the steps of one way of making ethanol from corn.

Ethanol Production from Corn

1. The corn grain is ground into a fine powder.
2. The powder is mixed with water to make a wet mash.
3. A chemical is added to the mash to change it to sugar.
4. Yeast (tiny living organisms) are added to the sugar to cause fermentation.
5. Fermentation changes the sugar into ethanol and carbon dioxide gas.
6. The ethanol is removed from the mash.
7. Any remaining water is removed from the ethanol.
8. A small amount of gasoline is added to the ethanol and, it is ready to burn.
9. The left-over mash grain is used as feed for livestock.



Ethanol Production in the United States



Pure ethanol can be burned in vehicles with special engines designed to burn it, or it can be mixed with gasoline and then burned in a regular engine. When ethanol is mixed with gasoline, it reduces the consumption of fossil fuels and reduces pollution.

Word Wise

The combination of ethanol and gasoline is called *gasohol*.

More places need to adopt this type of technology.

What's in the Future?

One thing you will have concluded by now is that the supply of oil to make gasoline won't last forever. We can look at ways to make the current oil supply last longer by conserving gasoline. This can be done by driving cars with greater fuel efficiency, car-pooling, or simply driving less.

Whatever we do to conserve, we still have to plan for the day when there will be no oil for making gasoline. Scientists are hard at work seeking alternative means for powering our cars and trucks. Will the popular choice be ethanol, hydrogen, solar energy, or chemical batteries? The alternative that wins out likely will depend on economic factors. Two important economic factors will be the cost to produce the alternative power supply and the eventual cost of the alternative fuel to the driver. What do you think you will be using to power your car when you are 70 years old?

Glossary

alternative fuels *(n.)* fuels that are different from those most commonly used today (p. 5)

atoms *(n.)* the smallest units of a chemical element that can still retain the properties of that element (p. 13)

biomass *(n.)* living, or recently living, plant or animal material (p. 20)

bond *(n.)* the force binding atoms and ions together (p. 13)

ethanol *(n.)* fuel made from crops such as corn and sugar cane (p. 19)

fermentation *(n.)* the process by which a substance is broken down into a simpler form, such as in the creation of cheese and vinegar (p. 20)

fuel cells *(n.)* energy conversion devices (p. 14)

gaseous *(adj.)* in the form of gas (p. 12)

hydrogen *(n.)* a chemical element in the periodic table (p. 12)

pollutants *(n.)* dirt or debris in the air or on the ground (p. 5)

radiant *(adj.)* brightly shining (p. 7)

renewable resource *(n.)* a supply of something that can be replaced; a source of energy that is not depleted by use (p. 9)

solar cells *(n.)* devices that convert light into electricity (p. 7)

Index

batteries, 7, 14, 16, 17, 22

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pollution, 5, 8, 16, 21

solar cells, 7–11

water, 12–16, 20

Name _____

Instructions: In the first box, write what you already know about alternative fuel cars. In the second box, write what you would like to learn. After you finish reading, fill in the third box with information you learned from reading the book.

K: What I Know
W: What I Want to Know
L: What I Learned

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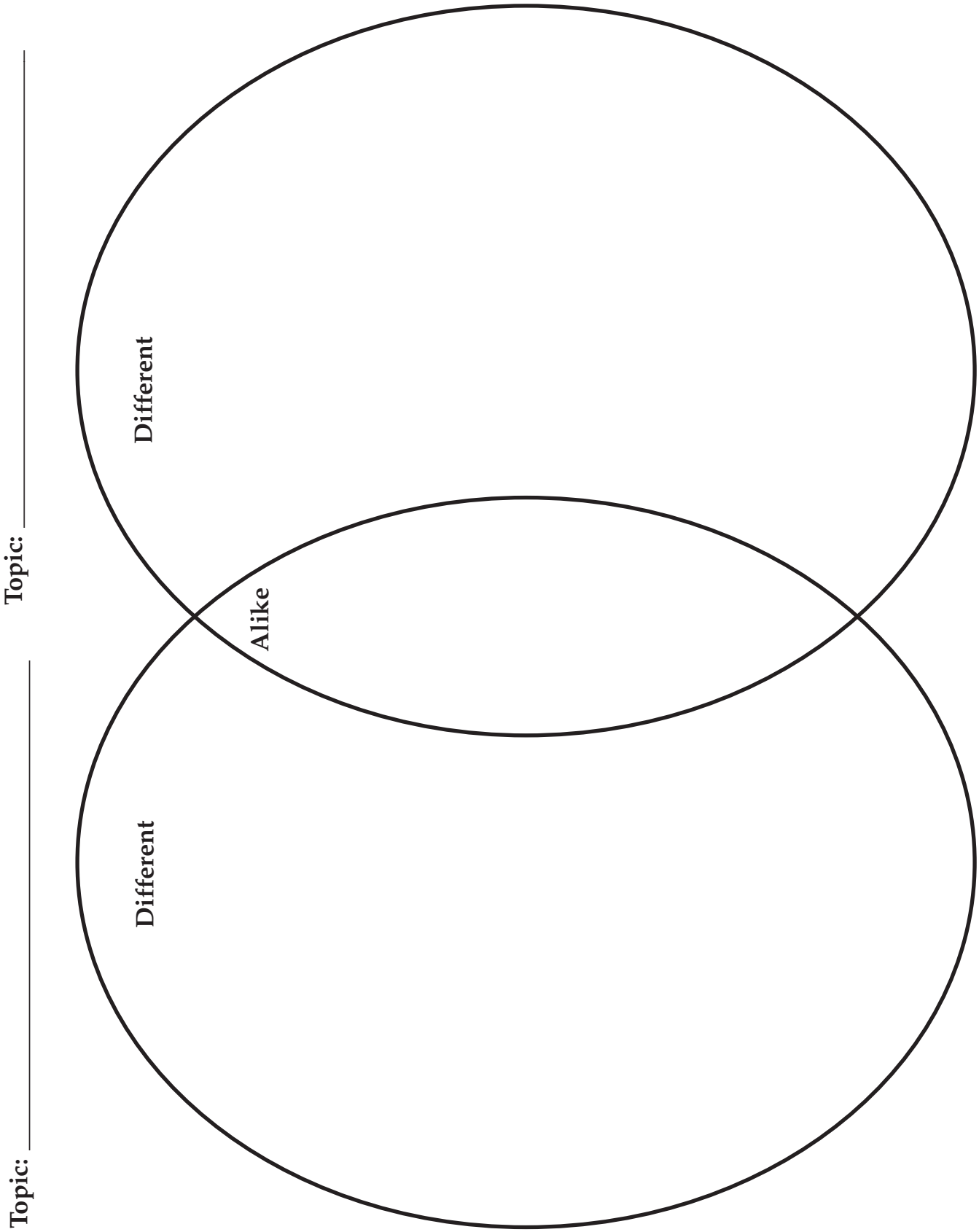
Name _____

Reading a-z

Instructions: Use the Venn diagram to compare two types of alternative fuel cars from the book.



ALTERNATIVE FUEL CARS • LEVEL V • 2

SKILL: COMPARE AND CONTRAST

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Name _____

Instructions: Read each sentence. Choose two words from the box that create a hyphenated compound adjective that completes the sentence. Write the new word in the blank space and underline the noun that each adjective describes.

gas	**solar**	**supply**	**powered**
day	~~**charged**~~	**guzzling**	**present**
oil	**gasoline**	**cell**	~~**battery**~~

Example: Battery-charged cars may be common in the future.

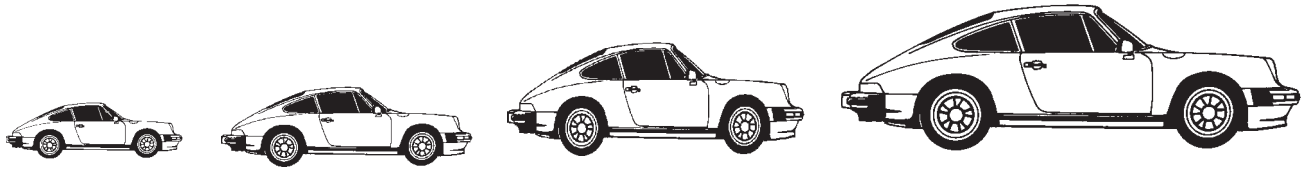
1. Some _____ experts estimate that after 2050, oil production will begin dropping.

2. Global warming is a _____ problem.

3. The world's _____ appetite can't last forever.

4. Due to the effect on the environment and diminishing oil supplies, scientists are trying to make advances in _____ technology.

5. Most people drive _____ cars.



ALTERNATIVE FUEL CARS • LEVEL V • 3

SKILL: HYPHENATED COMPOUND ADJECTIVES

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Name _____

Reading a-z

Instructions: Use a thesaurus to identify a synonym for each word. Then use both the word and the synonym in sentences. Write the sentences on the line provided.

1. **create** _____

_____

_____ _____
(synonym)

_____

2. **discover** _____

_____

_____ _____
(synonym)

_____

3. **replace** _____

_____

_____ _____
(synonym)

_____

4. **start** _____

_____

_____ _____
(synonym)

_____

5. **stop** _____

_____

_____ _____
(synonym)

_____

ALTERNATIVE FUEL CARS • LEVEL V • 4

SKILL: SYNONYMS

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The Roman Empire Faces Attila

A Reading A–Z Level V Leveled Reader
Word Count: 1,884

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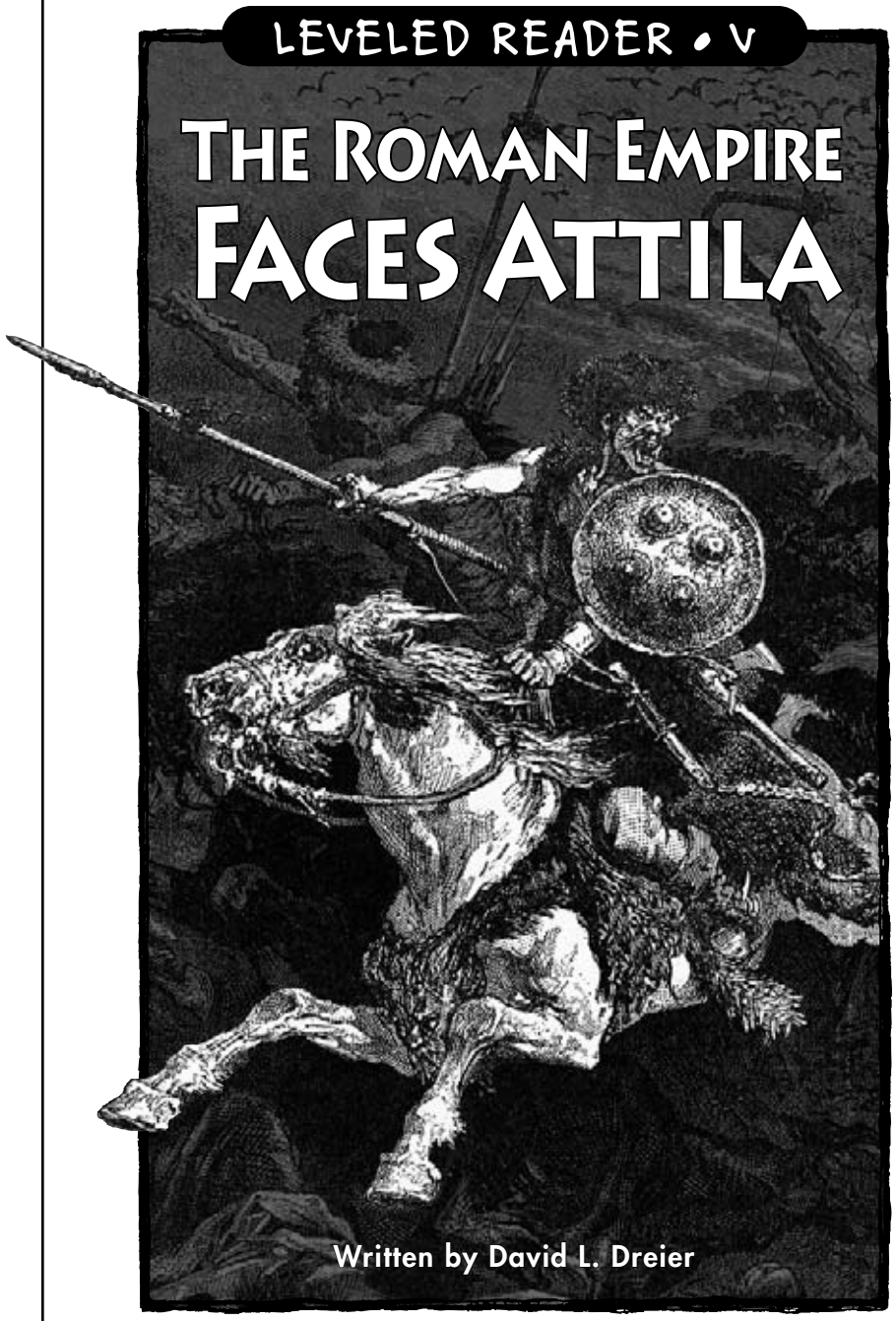
THE ROMAN EMPIRE FACES ATTILA



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The Roman Empire Faces Attila
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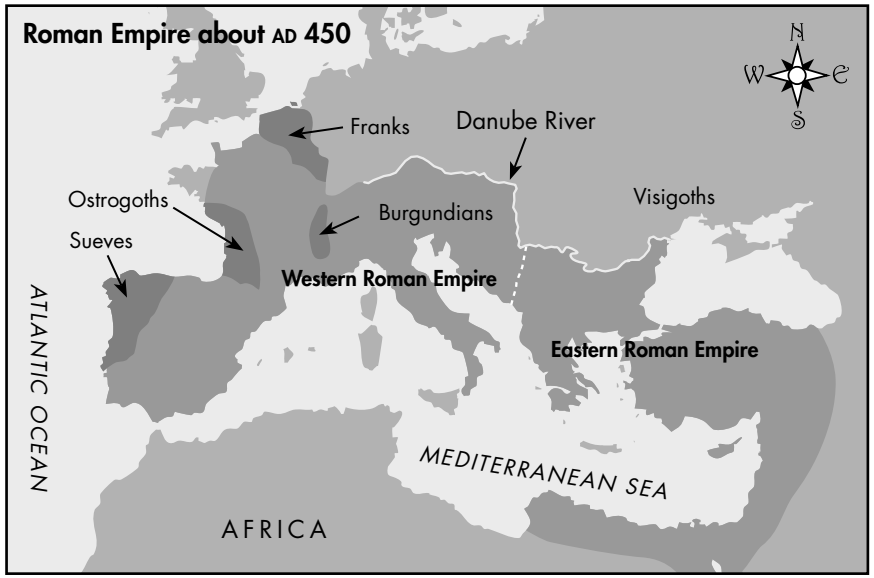
Terror from Asia

No invaders in ancient Europe struck as much terror into people's hearts as the Huns. These ferocious horsemen from northcentral Asia thundered into the heart of Europe in the AD 370s. Wherever they went, they left death and destruction behind them. Historians of the time described the Huns as hideous **barbarians** who killed without mercy.

Attila the Hun

The leader of the Huns when they were at the height of their reign of terror was a man named Attila (AT-uh-luh or uh-TIL-uh). The people of Europe found Attila so horrifying that they called him "the **Scourge** of God." Attila crushed nearly every army sent against him.



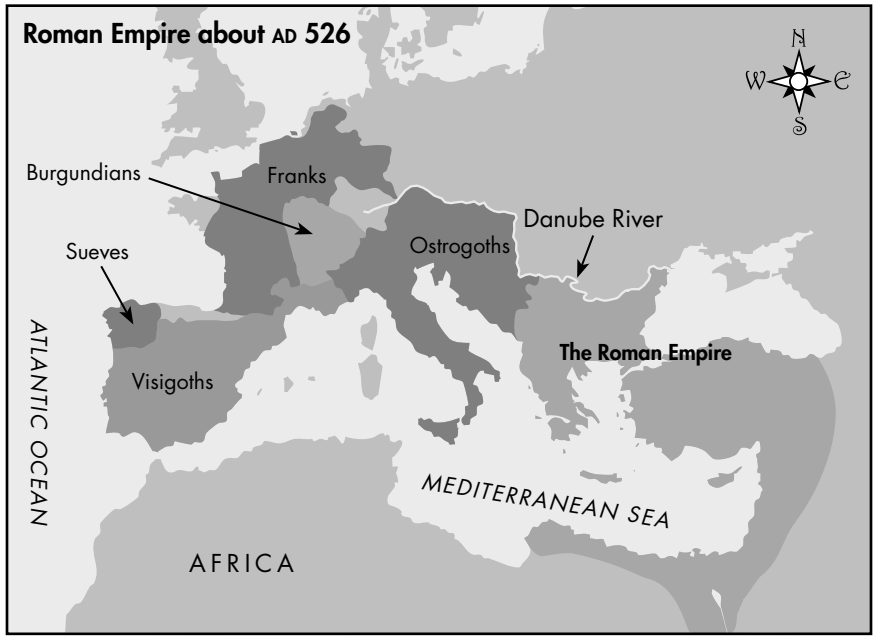
United We Stand

Beginning around 27 BC in Europe, the Roman armies fanned out and conquered much of the ancient world. The Roman **Empire** ruled as a united entity for close to five centuries. By the mid-300s, the empire was growing old and tired. The empire covered so much land that it took two emperors to govern it. One emperor ruled in the west from the city of Rome; the other—Valens—ruled in the east from Constantinople, a city in what is now the country of Turkey. By the year 400, the two halves of the empire would be permanently divided and would never enjoy the power they had once enjoyed as one united empire.

In AD 376, a messenger brought some very disturbing news to Roman Emperor Valens. The messenger said that large numbers of **Germanic** people called the Visigoths were swarming into the Roman Empire. They were seeking protection from a terrible new enemy from the east: the Huns. This was the first time that the Roman world had heard rumor of the Huns.

The Visigoth refugees were allowed to settle in the Eastern Roman Empire. But the Romans treated them badly. The angry Visigoths rebelled. For two years, they **rampaged** through part of the Eastern Empire, causing great destruction similar to what they were fleeing. Valens led an army to stop the uprising, but the Visigoths destroyed his army and Valens was killed.

Alaric I, king of the Visigoths, led his people to rebel against those who had given them shelter from the Huns.



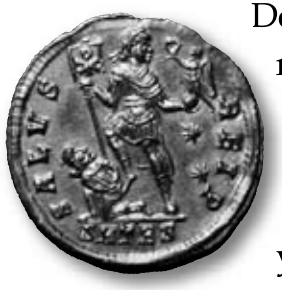
Nearly 100 years after the Visigoths sacked Rome, they and other Germanic tribes had taken over the land once governed by the Western Roman Empire.

Without the leadership of Valens, the Roman Empire became weaker. The Visigoths and other Germanic tribes began attacking the western part of the empire. Without a central leader, the Romans were powerless to stop the invaders. Nearly 40 years after the Visigoths first started fleeing the Huns, the Visigoths **sacked** the city of Rome in AD 410. Enemies had not destroyed the capital city in centuries. It was a devastating blow. The last thing the Romans needed at this point was even more trouble. But they were soon to get it, and it came from the Huns.

The Scourge of God

The Huns had settled into an area that is now part of the country of Hungary. They built towns. The leaders lived in houses made of wood, but most of the people lived in tents. The tents enabled them to easily leave the settlement on horseback, taking their home with them. The Huns were not content with what they had. They wanted more.

Roman coin circa AD 440



The Huns wanted money and nice things, so they attacked people who had those things. Beginning in the 420s, they demanded an annual payment of several hundred pounds of gold each year from the Romans. Desiring to keep the peace, the new Eastern Roman emperor, Theodosius II (thee-uh-DOH-shee-us) agreed to the demand. For more than 20 years, the Huns accepted the payments and caused the Romans little trouble. That began to change in the AD 440s, after a man named Attila rose to become the sole ruler of the Huns and the Germanic people the Huns had conquered.

Attila was in his late 30s. A Germanic historian of the time described the new king: "[He has] small, deep-set eyes, a flat nose, a few hairs in the place of a beard, broad shoulders, and a short, square body." Other people who met Attila said he had very simple tastes and ate and participated in feasts in moderation.

Attila during a feast with his warriors

Attila might have been moderate when relaxing with friends, but he was ferocious when dealing with the Romans. He demanded more gold from them. In order to maintain peace, Theodosius agreed to double the annual payment, but then Attila wanted even more. With an army of about 100,000 men, Attila launched war against the eastern part of the Roman Empire. The Huns reduced one Roman city after another to ruins and killed many thousands of people.

Walls like these were built around the Eastern Roman Empire's capital, Constantinople, to keep invaders like Attila from taking over the city.

To stop the destruction and killing, Theodosius agreed to once again double the annual payment of gold. The Huns would now get about 950 kilograms (2,100 pounds) of gold each year. But when Theodosius died in AD 450, the new Eastern Roman emperor, Marcian (MAR-shun), refused to make any further payments. That put Attila into a rage, and he took his fury out on the Western Roman Empire.

A Lady in Distress

Historians theorize that Attila may have had several reasons for turning his attention to the western part of the empire. He may have decided that Marcian was someone he didn't want to anger. Attila had also already drained the eastern part of the empire of much of its wealth. Both of these reasons made the Western Roman Empire an inviting target.

Attila had never needed an excuse for attacking. He just did it and took what he wanted. But this time, he pretended that he had an excuse. Honoria (ho-NOR-ee-uh), sister of the Western emperor, Valentinian III, had written to him. Honoria had been discovered having a secret romance with a servant. The servant was executed, and Honoria was locked away. Desperate to be free, she sent a letter to Attila begging him for help. She enclosed her ring as proof that she wrote the letter.

Attila announced that he considered Honoria's letter and ring a proposal of marriage. He said he wanted to marry the young princess. As a **dowry**, he demanded half of the Western Roman Empire. Needless to say, Honoria's brother Valentinian III refused this demand. Attila then declared that he would take what was rightfully his by force.

Attila really didn't care about Honoria. It was the Roman lands and riches he wanted. He was determined to get them. He assembled an army of about 100,000 men, including both Huns and Germanic **allies**. In early 451, Attila and his army crossed the Rhine River into Gaul—modern-day France. For several months, the attackers sacked and burned every city they conquered. They killed men, women, and children without mercy. They took people's riches and all their food. Attila believed that nothing could stop him. He was about to get a big surprise.

Attila crossing the Danube, a river that helped define the northern borders of the Roman Empire

The Last of the Romans

The Roman Empire was fortunate that it still had one great general. His name was Flavius Aetius (eye-EE-tee-us), and he served in the court of Valentinian III. He is usually just called Aetius. As the Western Empire crumbled, Aetius did all he could to hold the empire together. For his efforts, he has been remembered as "the Last of the Romans."

With the advance of Attila through Gaul, Aetius was facing the greatest test of his life. He scrambled to raise an army. Arguing that Attila was the enemy of **humanity**, Aetius convinced some of the Germanic tribes living in Gaul to join forces with him. These new allies included a large force of Visigoths under the command of their king, Theodoric. Aetius's army was now about as large as Attila's. In the late spring of 451, the Roman general led his forces to fight Attila and the Huns.

Thinking Critically

Aetius needed a larger army to fight the Huns so he convinced men from Gaul to join the Roman army. Which is more important when fighting an enemy?

Number of men — or — talent?

The Visigoth king Theodoric was slain in battle with Attila and the Huns, but Aetius and the Roman and Visigoth armies went on to beat the Huns.

The Battle of Chalons

Aetius and his army caught up with Attila in late June outside the city of Orleans, in modern-day France. The Hun army had been conducting a **siege** of the city. Seeing the approaching Roman forces, Attila retreated toward an open plain near the town of Chalons-sur-Marne. There, the two huge armies met in one of the greatest battles in history.

The Battle of Chalons began in the afternoon. After firing arrows at each other, the two sides fought up close with swords, spears, and axes. By evening, when the fighting stopped, tens of thousands of men from both sides lay dead on the field. Among them was Theodoric. But there was no question about who had won. Aetius's army had defeated Attila.

The next day, Aetius allowed Attila to retreat with the remainder of his army. The Roman general was criticized for this. But Aetius probably made a wise decision. His strategy was to keep the Germanic forces as allies of Rome. The best way to do this was if the Goths and the Romans had the Huns as a common enemy.

Attila's army withdrew from Gaul, moving back across the Rhine River to settlement. The Western Roman Empire was safe for the time being. But Attila still had plenty of men, and he hadn't given up on conquering the Western Empire. The Romans hadn't seen the last of Attila and the Huns.

Attila and his armies were known for the great violence they committed.

Attila and the Pope

In June of the following year, Attila led his army across the mountains into Italy. He was still pretending that he wanted to marry Honoria.

The Huns so thoroughly destroyed the city of Aquileia on their rampage through Italy that the city never recovered.

This time, Aetius was unable to raise an army large enough to fight the Huns. The Germanic people who had helped to save Gaul were less interested in saving Italy. Attila's army roamed at will in northern Italy, demolishing villages and killing their inhabitants. The army moved closer and closer toward Rome.

Aetius and Emperor Valentinian decided to try **diplomacy** instead of battle. They asked Pope Leo I, the head of the Catholic Church, for his help. They wanted the pope to meet with Attila and ask him to leave Italy.

Pope Leo met with Attila at the Huns' camp. What the two men said to each other was not recorded. But Attila agreed to stop his attacks.

This victory greatly increased the **prestige** of the pope. However, some historians believe that Attila was in a weaker position than many people realized. They believe his army had not fully recovered from the Battle of Chalons, and many of his men were dying of a plague. In addition, he was running short of food and other supplies. Whatever Attila's reasons were, he left Italy, never to return.

Pope Leo I kept Attila from furthering his attacks in Italy.

Divided They Fall

Attila stopped pretending to need Honoria as a bride. In fact, he already had a number of wives. In AD 453 he took a new bride, a beautiful young woman named Ildico. After a day of feasting, Attila and Ildico went to bed.

The next morning, Attila failed to emerge from his bedroom. Worried servants entered his room and found Ildico trembling with fear. On the bed lay Attila. He was dead. During the night, the king had suffered a burst blood vessel in his nose or throat. He drowned to death on his own blood.

After the death of Attila, the Huns' empire did not last. His numerous sons split the empire among themselves. Under Attila, the Huns had been united, but now they became divided. Their lack of unity caused them to grow weak.

Germanic tribes that had been ruled by Attila saw that the Huns were weakening. In 454, they revolted. Within a few years, they had overthrown the Huns. With their empire shattered, the Huns fled. In the words of one historian, they were "scattered to the winds." Once the terror of humanity, the Huns made no more lasting marks on history.

More than 1,500 years after Attila's reign, people in Hungary asked the government there to officially recognize their ethnicity as Hun.

Glossary

allies *(n.)* people or groups that join with others in a common cause (p. 12)

barbarians *(n.)* people from a foreign country who are considered brutal or uncivilized (p. 4)

diplomacy *(n.)* the practice of negotiating between leaders of different countries (p. 16)

dowry *(n.)* an amount of property or money given by a bride's family to the family into which she marries (p. 11)

empire *(n.)* a collection of nations or people ruled by one person who has total authority (p. 5)

Germanic *(adj.)* describing a group of languages with similar characteristics spoken across northwestern Europe (p. 6)

humanity *(n.)* all human beingsrace (p. 13)

prestige *(n.)* a level of high standing or respect (p. 17)

rampaged *(v.)* proceeded in a course of action in an angry or violent way (p. 6)

sacked *(v.)* destroyed a city and stole all its wealth after capturing it from an enemy (p. 7)

scourge *(n.)* a person or thing that is seen as an agent of punishment, suffering, or vengeance (p. 4)

siege *(n.)* surrounding and often attacking an enemy for a long time while preventing them from getting food and other supplies (p. 14)

Name _____

Instructions: In the first box, write what you already know about Attila and the Huns. In the second box, write what you would like to learn about the leader and his troops. After you finish reading, fill in the third box with information you learned from reading the book and the fourth box with what you still want to know.

K: What I Know
W: What I Want to Know
L: What I Learned
S: What I Still Want to Know

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Name _____

Reading a-z

Instructions: Write the events on the timeline in chronological order.

Date	Event

THE ROMAN EMPIRE FACES ATTILA • LEVEL V • 2

SKILL: SEQUENCE EVENTS

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Name _____

Reading a-z

Instructions: Write the events on the timeline in chronological order.

Date	Event

THE ROMAN EMPIRE FACES ATTILA • LEVEL V • 2A

SKILL: SEQUENCE EVENTS

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Name _____

Instructions: Read the sentences below. Circle all of the adjectives and underline the nouns or pronouns they describe.

1. The Huns were ferocious horsemen from northcentral Asia.
2. Historians describe them as hideous barbarians who killed without mercy.
3. The Roman Empire ruled as a united entity for close to five centuries.
4. Germanic tribes began attacking the western part of the empire.
5. It was a devastating blow.
6. They demanded an annual payment of several hundred pounds of gold each year.
7. A Germanic historian of the time described the new king.
8. "[He has] small, deep-set eyes, a flat nose, a few hairs in the place of a beard, broad shoulders, and a short, square body."
9. With an army of about 100,000 men, Attila launched war against the eastern part of the Roman Empire.
10. Honoria had been discovered having a secret romance with a servant.
11. For several months, the attackers sacked and burned every city they conquered.
12. These new allies included a large force of Visigoths.
13. The two huge armies met in one of the greatest battles of history.
14. Worried servants entered his room and found Ildico trembling with fear.

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Name _____

Instructions: Fill in the blanks to complete the sentence for each pronunciation given in The *Roman Empire Faces Attila*.

1. AT-uh-luh

The word is spelled _____ and has _____ syllables.

The emphasis is on the _____ syllable.

2. uh-TIL-uh

The word is spelled _____ and has _____ syllables.

The emphasis is on the _____ syllable.

3. thee-uh-DOH-shee-us

The word is spelled _____ and has _____ syllables.

The emphasis is on the _____ syllable.

4. MAR-shun

The word is spelled _____ and has _____ syllables.

The emphasis is on the _____ syllable.

5. ho-NOR-ee-uh

The word is spelled _____ and has _____ syllables.

The emphasis is on the _____ syllable.

6. eye-EE-tee-us

The word is spelled _____ and has _____ syllables.

The emphasis is on the _____ syllable.

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Gems: Treasures from the Earth

A Reading A–Z Level V Leveled Reader
Word Count: 1,691

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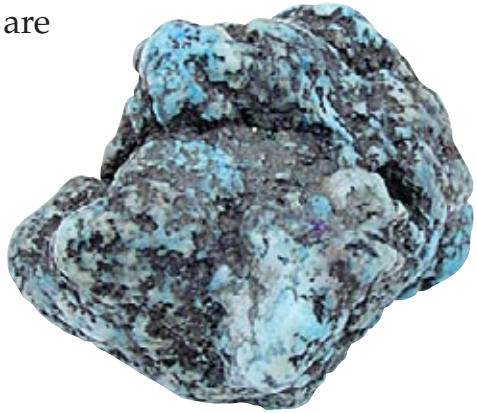
Introduction

Many people consider gems to be Earth's most beautiful creations. They are willing to spend thousands of dollars for even a small bit of that beauty. Sparkling gems are worn on the fingers, necks, and wrists of people around the world. Families pass them down through the years. They can be found on crowns worn by royalty and on sacred religious objects.

Many gems decorate the most beautiful and valuable jewelry.

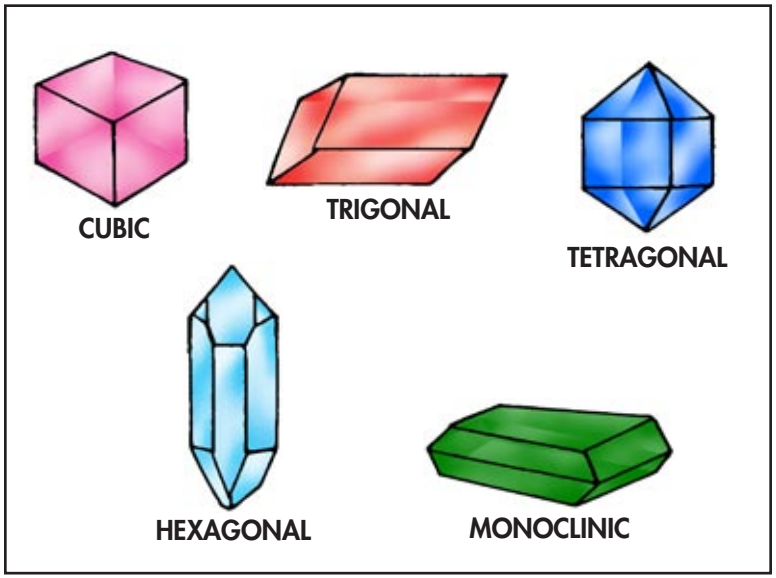
A gem is any beautiful stone that can be used in jewelry. Most gems have beautiful colors or sparkle. There are three major types of gems. The first two, **crystals** and stones, are made of minerals—the natural, nonliving substances that make up ordinary rocks. Crystals are very pure minerals that form in tight shapes and neat patterns. Stones are mixed minerals that have beautiful colors and patterns, but do not have strict shapes. The third group, **organic gems**, comes from substances made by living things.



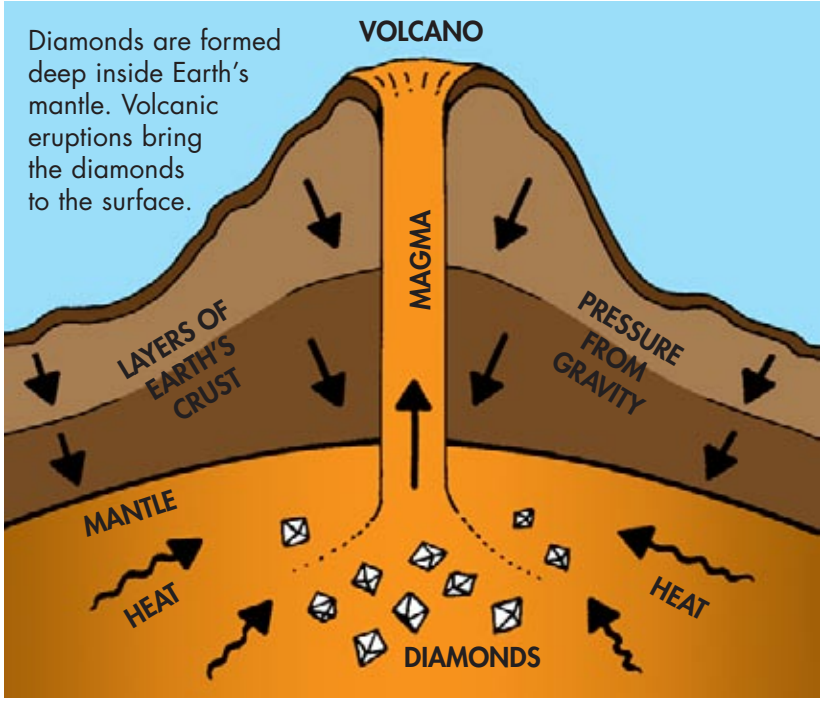
Garnet, a crystal (top); turquoise, a stone (center); natural pearl, an organic gem (bottom)

How Are Gems Formed?

Some of the most famous and expensive gems, including diamonds, emeralds, and rubies, are crystals. Crystals are very pure forms of minerals. Every mineral is made of millions of tiny particles called **atoms**. In ordinary rocks, many kinds of atoms are mixed together without any kind of pattern or order. But in crystals, the atoms are arranged very precisely in neat, orderly patterns. Crystals have flat sides, called faces, which form shapes. Different kinds of crystals form in different shapes, some of which are shown below. Some crystals form cubes, while others form long, six-sided columns.



Examples of Crystal Shapes



Most crystals form deep within the earth under very special conditions. Some, like diamonds, form when the mineral is squeezed under layers of rocks. The squeezing forces the atoms to arrange themselves until they are in the smallest shape possible. Others, such as sapphires, form when a mineral gets so hot inside the earth that it melts. As it slowly cools, the atoms fall into place to make a regular crystal pattern. And still other gems, such as opals, form when minerals dissolve in water. As the water evaporates very slowly, the mineral left behind forms a crystal.

Try This

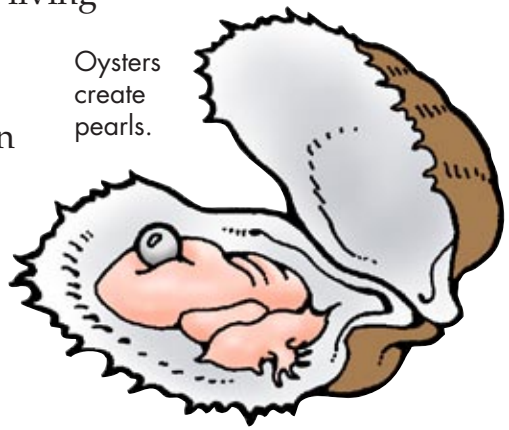
Make your own crystals!

Rock salt, also known as halite, forms when salty seas evaporate. You can watch a much smaller version of this same process using just water and ordinary salt.

1. Mix a tablespoon of salt into a cup of warm water. Stir it until it dissolves.
2. Keep adding salt, a little at a time, until no more salt will dissolve.
3. Put a clean toothpick in the water.
4. Place the cup somewhere warm in the Sun. As the water evaporates, crystals will form on the toothpick and the sides of the cup.
5. Look at the crystals under a magnifying glass. What do they look like?

The minerals in stones do not form orderly patterns, and they may have other minerals mixed in. Stones often form in layers that make streaks and lines, called the **grain**. Grain gives stones beautiful patterns and surfaces.

Organic gems, which include pearls, amber, and coral, come from living things. Pearls begin when a grain of sand gets trapped inside an oyster's shell. The oyster covers the grain with layers of smooth **nacre**, the material it uses to build its shell.



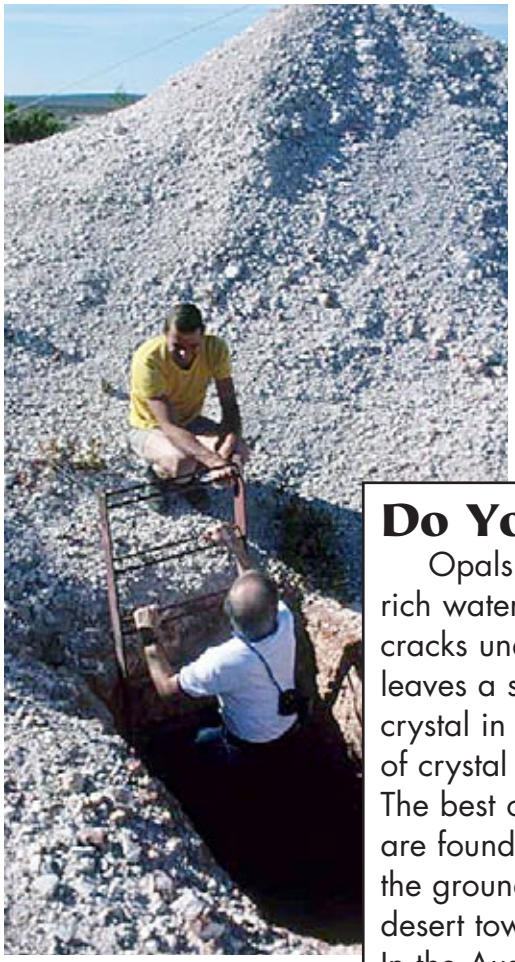
Oysters create pearls.

Coral is made of skeletons left behind by millions of tiny sea creatures. Amber began millions of years ago as tree sap. Amber often contains the fossils of insects or spiders that got caught in the sap.

A spider in amber

How Do Gems Get into Jewelry?

Most mineral gems are found deep within the earth. Humans must dig mines to get them. Because gems are so small and rare, mining is often still done by hand. Miners must chip and cut at the rock, looking for stones **embedded** within it.



Opal mines are simple holes in the ground.

Do You Know?

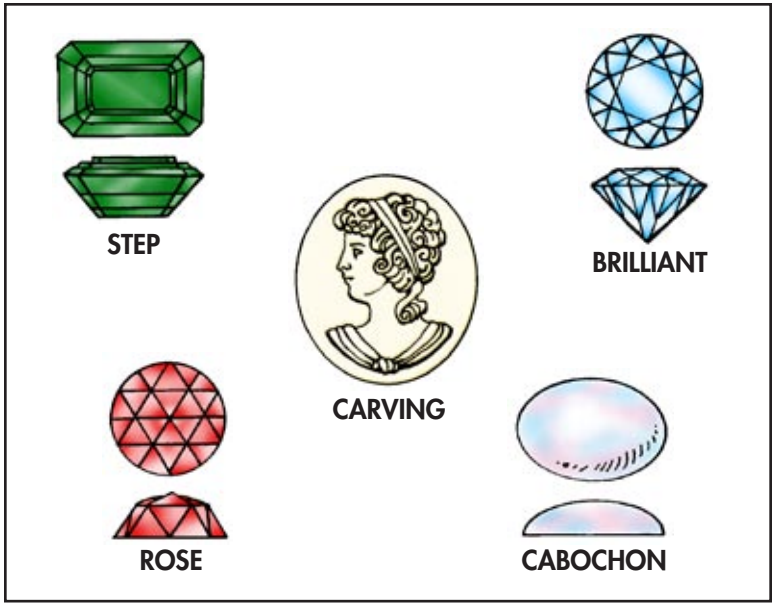
Opals form when mineral-rich water evaporates from cracks underground. This leaves a streak of mineral crystal in the rock. Streaks of crystal are called veins. The best opals in the world are found in veins under the ground in the Australian desert town of Coober Pedy. In the Australian Aborigine language, "Coober Pedy" means "white man in a hole."

When a miner finds a gem, it looks very different from the one you see in a ring or necklace. The gem often has rough edges. Its surface looks dull. Its shape is bumpy. Gems often have cracks, dark marks, bubbles, and other flaws. Gem cutters cut gems into regular shapes that show off their best qualities and cover their flaws. Gem cutters once used diamond-edged saws and polishers, but recently they began using lasers to cut gems.

An uncut diamond looks uneven and flawed.

Most crystal gems are cut into flat surfaces called **facets**. Facets show off the gem's color and pattern, and allow it to sparkle with reflected light. Gem cutters cut different gems using several different cutting styles.

A cut diamond reflects lots of sparkle.



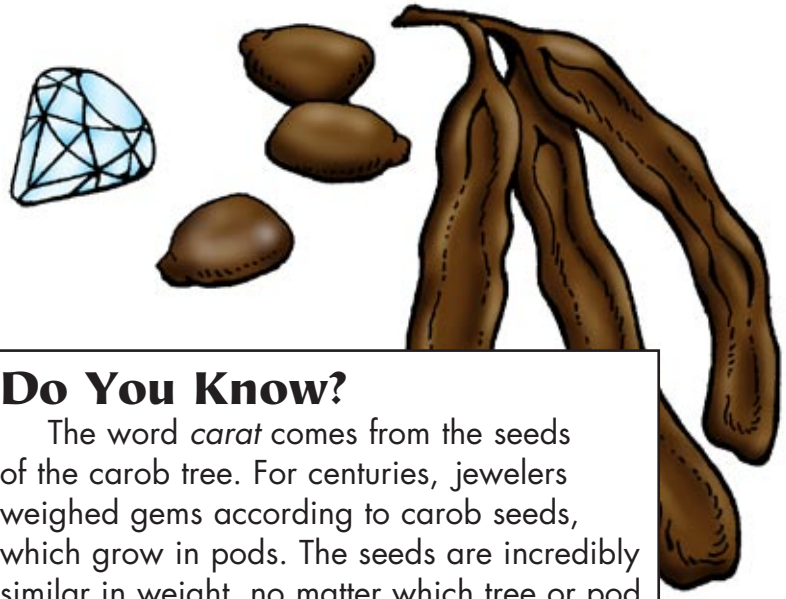
Cutting styles (top and side views) show gems' best features.

The popular brilliant-cut style is often used with diamonds, which have more sparkle than color. This style has many facets that reflect light off the gem. Deep green emeralds, on the other hand, are often cut into a style called the step cut. This cut, with its rectangular facets, creates a wide, flat top of pure color. The rounded top and triangular facets of another style, the rose cut, are most often found on older gems. The oldest style of cut, the cabochon (KAB-oh-shon), is simply rounded and polished. It is most often used with **opaque** or patterned stones. Other gems, such as jade and coral, can be carved into small sculptures.

What Makes Gems Valuable?

Gems as a whole are valuable for two reasons: they are beautiful, and they are rare. The value of a gem is determined by the gem's hardness and a system called the "four Cs": cut, carat weight, color, and clarity.

Cut refers to how well the gem is cut and polished, or how beautiful the natural gem is. A poorly cut gem may look dull or uneven. Carat weight is the size of the stone. One carat weighs about as much as a kernel of unpopped popcorn.



Do You Know?

The word *carat* comes from the seeds of the carob tree. For centuries, jewelers weighed gems according to carob seeds, which grow in pods. The seeds are incredibly similar in weight, no matter which tree or pod they come from. The modern carat weighs about as much as one carob seed.

The next of the four Cs, color, is one of the major reasons why gems are considered beautiful. Unlike regular rocks, gems have bright, pure, strong colors. The stronger and purer the color, the more valuable the gem is. Often, the same mineral can form different-colored gems. Red rubies and blue sapphires both contain the same mineral. The different colors come from tiny bits of other chemicals mixed with the main mineral. It only takes one different atom in a thousand to change the color of a gem.

Clarity refers to how flawless the gem is. Gems with dark marks, cracks, and bubbles are less valuable than gems without these flaws. Gems that are cloudy are also less valuable than clearer gems. But clarity is often not as important as the size and rarity of a gem. Emeralds often have many flaws, but because they are so rare, a flawed emerald is more valuable than a flawless diamond.

This uncut emerald shows many cracks and other flaws.

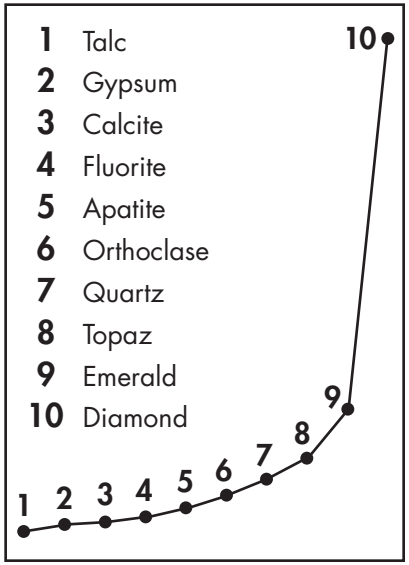
Hardness and the Mohs Scale

Hardness indicates how pure and tightly structured the mineral is in a gemstone. It tells how well a gem will hold up to daily wear. A geologist named Friedrich Mohs developed a scale to test the hardness of gemstones.

He simply scratched one gem with another. A gem can only scratch other gems that are softer than it is. The softest mineral, talc, which cannot scratch anything else, is a 1 on the Mohs scale. Diamond, the hardest substance on Earth, can scratch anything, but can only be scratched by another diamond. Diamond is a 10 on the Mohs scale. Most gems must be 5 or above to be strong enough for use in jewelry.

Friedrich Mohs

The Mohs scale measures the hardness of various gems. For comparison, a fingernail has a hardness of 2.5, and a penknife measures 5.5.



	Diamond	Emerald	Jade	Opal	Pearl	Quartz	Ruby	Sapphire	Turquoise
Africa	✓	✓				✓	✓	✓	
North America			✓	✓	✓	✓			✓
South America		✓	✓			✓			
Europe	✓					✓			
Asia			✓		✓	✓	✓	✓	✓
Australia	✓		✓	✓		✓	✓	✓	
South Pacific					✓	✓			

Gems Around the World

What Are Some Types of Gems?

Diamonds are the hardest natural things in the world. Because diamonds can cut anything, including metal and stone, flawed or unattractive diamonds are often put on saws and drill tips. Most diamonds are almost colorless, but very rare diamonds can be yellow, red, or blue. They are most often found in South Africa, Russia, and Australia.

Diamonds are extremely popular for engagement rings.

One of the most famous diamonds, the Hope diamond, is not the largest, but it is a rare sky-blue color. Its long history of theft and ownership by royalty and the rich gave it a legend of being cursed. The largest diamond ever found is the Cullinan diamond, which was discovered in South Africa. It weighed over 3,100 carats and was as large as a pineapple. It was cut into two gems, one of which, the Greater Star of Africa, weighs 530 carats.

This photo of the Hope diamond shows its actual size.

Do You Know?

Graphite, or pencil lead, is exactly the same mineral as diamonds. In graphite, the atoms are arranged in loose layers. This makes graphite very soft—so soft that if you rub it on a piece of paper, the atoms break off, leaving a pencil mark. In diamonds, those same atoms have been squeezed together so tightly that nothing except another diamond can scratch them off.

Rubies and sapphires are made of the same mineral. Rubies are always blood-red or pink. Any other form of the mineral, no matter the color, is considered a sapphire. However, sapphires are most famous for their deep blue color.

Red raw ruby (left) and two raw sapphires, one blue and one yellow

Do You Know?

Birthstones were first worn in the Middle Ages. Astrologers and fortune-tellers often associated birthdays with certain stars, planets, flowers, and gems. Your gemstone supposedly brought you good luck, protection, and wealth. There are different lists of birthstones in different places. The following is a current list of birthstones in the United States.

January	Garnet	**July**	Ruby
February	Amethyst	**August**	Peridot
March	Aquamarine	**September**	Sapphire
April	Diamond	**October**	Opal
May	Emerald	**November**	Topaz
June	Pearl	**December**	Turquoise

The quartz family is the most common of all crystals. Quartz is found all over the world, in all colors of the rainbow. Most quartz is so common that anyone can afford it. The largest quartz crystal ever found was about 6 meters (20 ft.) long. It weighed more than 44,000 kilograms (48 tons)—more than a loaded 18-wheeled truck. The most valuable quartz is a multicolored stone called opal. Opals often contain white, blue, and red-orange colors. They are most often found in Australia.

Quartz crystals are common and can grow very large.

Emeralds are known for their green color. Gem-quality emeralds are rare and usually small, but people prize their color so much that emeralds are more valuable than diamonds. The finest emeralds are found in Colombia. The same mineral that forms emeralds also forms a blue-green stone called aquamarine.

Jade is one of the most valued stones. It occurs in lavender, white, and almost every shade of green, which is the most valuable. Jade is very tough but easy to carve along its grain. Many civilizations, especially in Asia, used jade to make beautiful knives, swords, and axes.

Jade figurine (above); carving jade (left)

Turquoise is often specked and striped with black.

Blue-green turquoise comes from the deserts of Iran, Tibet, and the southwestern United States. This stone often has pretty spots and streaks running through it. Much of the world's turquoise is set in silver, as the Navajo Native Americans traditionally wore it. The Navajo believed turquoise to be pieces of the sky that had fallen to Earth.

Natural pearls are strangely shaped and are very rare. It takes an oyster many years to create a pearl from a tiny bit of sand. Almost all of the beautiful round pearls in jewelry stores are **cultured**, or made by people. Pearl farmers place a round shell bead into an oyster's shell. The oyster covers the bead with nacre, creating a perfectly round pearl. Cultured pearls come in every color of the rainbow, from creamy white to pink to yellow to green and even black.

Natural pearls (inset) are rare and oddly shaped; cultured pearls are round.

This strip mine clears an immense area of land.

Conclusion

Beautiful gems can be found around the world. Many gems are symbols of power and wealth. For centuries, people have killed and died for them. In some places, like West Africa and Colombia, the gem trade is still filled with blood and violence. Mining gems with dynamite and strip mines is often dangerous, damaging both humans and the Earth.

Scientists can grow gems in the lab that are identical to the finest natural gems but cost a thousand times less. In the future, created gems might help fill our desire for gemstones' beauty while preserving Earth and its people.

Glossary

atoms *(n.)*	tiny particles that make up all substances (p. 6)
crystals *(n.)*	minerals formed in regular, tight patterns (p. 5)
cultured *(adj.)*	made with the help of human beings (p. 22)
embedded *(adj.)*	buried in; surrounded by (p. 10)
facets *(n.)*	flat surfaces of a cut gemstone (p. 11)
grain *(n.)*	lines and patterns made by layers of minerals in a stone (p. 9)
nacre *(n.)*	the material oysters use to make their shells and to make pearls (p. 9)
opaque *(adj.)*	not see-through (p. 12)
organic gems *(n.)*	gems made from substances created by living things (p. 5)

Name _____

INSTRUCTIONS: Read each statement and predict whether it is true or false based on what you know about gems. As you read, confirm or revise your prediction in the third column. If you need to revise the statement, change it to a true statement and write it in the box. If you confirmed your prediction, write the page number that you found the answer.

Statements	T or F?	Revise or Confirm Your Prediction
1. Diamonds are formed by minerals being squeezed under layers of rock.		
2. A ruby is a crystal.		
3. Crystals are formed by volcanoes.		
4. Coral is a gem.		
5. The word *carat*, which refers to the size of the gem, comes from the name of the vegetable, *carrot*.		
6. Clarity refers to the color of the gem.		
7. Emeralds are the hardest natural things in the world.		
8. A flawed emerald can be worth more than a perfect diamond.		
9. Cultured pearls are made by machines.		

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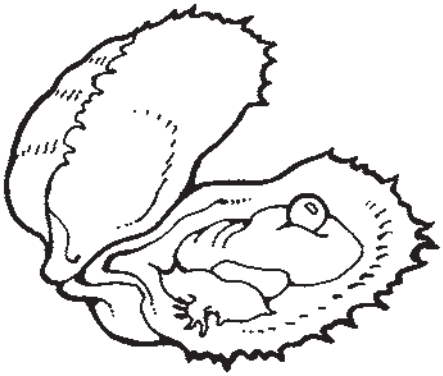
Name _____

INSTRUCTIONS: Use the boxes below to write the cause-and-effect sequence for each process.
You can look back in the book to help you.

How sapphires are formed (p. 7)
↓

How opals are formed (p. 7)
↓
↓

How gems become jewelry (p. 10–12)
↓



How amber is formed (p. 9)
↓

How pearls are formed (p. 9)
↓

GEMS: TREASURES FROM THE EARTH • LEVEL V • 2

SKILL: CAUSE AND EFFECT

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Name _____

INSTRUCTIONS: Read the sentences below. In the blank on the right, tell whether they are simple, complex, or compound. Then circle the parts of the sentences and label them *subject, verb, phrase,* or *conjunction.*

Gems are beautiful, and they are valuable. ___compound___

subject verb conjunction subject verb

People who cut gems are called lapidaries. _____

Emeralds are very rare. _____

Diamonds are the hardest things on earth,

and nothing else can scratch them. _____

Pearls, which are organic gems,

form inside oysters. _____

The brilliant cut has many facets. _____

GEMS: TREASURES FROM THE EARTH • LEVEL V • 3

SKILL: SENTENCE TYPES

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Two Kettles

A Reading A–Z Level V Leveled Reader
Word Count: 2,199

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Ellinor's Surprise

BOOM! BOOM! BOOM! The **muskets** fired near Plymouth Plantation. Ellinor stopped her work and ran outside to the garden. "Father, why is Captain Standish training soldiers so early?"

"The men are hunting for the feast we will share together!" her father answered as he picked a ripe orange **pompion**.

Ellinor's face showed surprise. "What do you speak of?"

The new governor of the English colony, William Bradford, joined Ellinor and her father, saying, "This will be a fit celebration for a good harvest!"

"Sister, don't you know?" Ellinor's little brother said. "The men have gone **fowling** for our first feast!" Then he and their little sister ran off with the pompion.

"Is this true, father?" Ellinor's heart pounded. There had not been much to celebrate over the past year. Ellinor and her family were a part of a group of 102 English colonists who sailed on the *Mayflower* to Plymouth Plantation in the winter of 1620.

"Yes, we will celebrate, even though we have suffered greatly," he said.

Their first winter had been very hard on everyone. Only half of her village had lived until the spring. Her own mother had quickly died from disease. Luckily, a native man named Tisquantum, whom the colonists called *Squanto*, spoke English and agreed to live with them as a translator. He taught the people in Plymouth new ways to plant, hunt, fish, and store food. Without his help, Ellinor knew they would not have been able to live here.

Governor Bradford said, "Ellinor, there are now too few women left to prepare food for a feast. You are old enough and must join them to help."

Ellinor nodded, but her heart was heavy with questions.

Little Deer's Worries

"Mother!" Little Deer called out as she pulled a piece of **sinew** (SIN-you) thread, made from deer tendon, through her long bone needle. Her pet skunk, Tiptoe, slept in her lap while she worked on a new moccasin.

"Mother, I need more **deerskin** for this . . . "

Tiptoe awoke, jumped from her lap, and ran out the door, with Little Deer right behind him. Hundreds of birds flew above, screeching loudly. Little Deer's mother walked up to her but stopped when she saw people walking out of their meeting place, the **longhouse**.

"Many shots were fired at the English village," Little Deer's mother said. "Our leader, Yellow Feather, meets with important leaders from nearby tribes."

Little Deer felt her stomach tighten. The English people should not live here. Her tribe, the Pokanoket (POH-kah-no-kit), was one of sixty-seven Wampanoag (wam-pa-NO-ag) nations. The "people of the first light" had fished the waters, planted crops, and hunted the animals in this area for thousands of years. Little Deer, like her elders, was taught to use the many resources of the land with respect in order to preserve them for the future.

"We do not know if the shots signal the Englishmen's preparation for war," Yellow Feather said. He hoped not, but Yellow Feather and the English had agreed to help each other in times of war. "We will talk with them to see if they need our help. Get ready. We leave soon."

A year ago, the English had arrived on Wampanoag land, building a village without asking permission. They knew little about living here and had few useful skills. They had depended on Tisquantum, a Patuxet Wampanoag, to teach them how to survive in this place.

Little Deer was angry at the English for taking Wampanoag land and bringing diseases. Thousands of her people had died. Plymouth Plantation had once been the village of Patuxet, before the entire village fell to the plague.

Now Little Deer felt as if a cloud had just darkened her world. There had not been a war in her village since she was small. Her people should not fight in the Englishmen's war. She ran down to the stream with Tiptoe, where she would let the water wash away her worry.

A Fit Feast

"Look! The Indians are coming here!" someone shouted.

From far down the hill, a very large group of Wampanoag men was walking toward Plymouth. Their leader, whom the English called Massasoit (MA-sa-soy-it), was in front. Ellinor shivered. She knew Governor Bradford had made peace with them, but still she worried. Ellinor did not understand the Wampanoag and their ways, or even how they dressed.

With Squanto as the translator, the governor welcomed Massasoit and his men.

"We heard many guns," Squanto translated for Massasoit. "Do you prepare for war?"

"No," the governor said. "There is no war. The men are hunting fowl for a feast. We celebrate a good harvest."

Governor Bradford led Massasoit on a walk through the village. He pointed out the preparations being made. Governor Bradford said, "Please, would you and your people join us?"

Massasoit nodded, and Squanto said, "They will come. Yellow Feather will send men out to hunt deer for the feast. Others will bring the women and children from the village. They can help you prepare."

"We are pleased," said the governor. "Captain, tell everyone that King Massasoit and his people will celebrate with us."

Ellinor's heart dropped. So many more people! How would they cook enough food for them all?

A Joint Task

Little Deer walked behind her mother, clinging tightly to Tiptoe as they entered the English village. "What do I have to celebrate with the English?" she muttered. She stopped to tighten the ***quahog*** clam shell jewelry her mother had woven in her long black hair.

Little Deer felt the eyes of the colonists watching her. The English *sachem*, or leader, greeted the women and children. His smile was like a large *quahog* shell, and Little Deer did not trust him.

Tisquantum and a fat Englishman stood next to a cooking **hearth** outside one of the square English log homes. A short, yellow-haired English girl was standing near them. The girl did not look up at Little Deer when they arrived.

"Welcome to Plymouth," the large-smile man said in greeting.

"The women and children would like to help prepare the food," Tisquantum said.

"That is good!" he said. "Ellinor . . . "

The yellow-haired girl looked up.

"I want you to be in charge of preparing the **samp**, the corn porridge."

Tisquantum spoke next. "Little Deer, you have learned well from your mother in the ways of making ***Nasump***. You will assist this girl, El-li-nor."

Little Deer stepped back slightly and shook her head.

"We are guests here," Little Deer's mother said. "You will do as you are asked."

The fat man said, "Grind the corn here," as he pointed at a long, hollowed-out log. "Then you may choose the ingredients for the samp."

Ellinor stepped away from Little Deer and Tiptoe.

Little Deer did not look up.

Making *Nasump*

Ellinor poured a cup of dried corn kernels into the hollowed log and began to grind them into flour with a heavy stone pestle.

Little Deer did the same. Neither girl spoke or looked at one another.

The skunk that sat at Little Deer's feet made Ellinor nervous. She was not used to being so close to wild animals.

Both girls ground the corn for many hours. Ellinor was most uncomfortable and tired. Part of it was the hard work—but part was because of her cooking partner. Ellinor added the new flour to the large supply of corn flour that had already been ground.

Two large kettles filled with water hung over the open hearth. As the water boiled, Ellinor scooped the corn flour and added it to one kettle. Little Deer added corn mixture to the other. Just then, Tiptoe brushed against Ellinor's leg.

"AHHH! Get away!" Ellinor screamed and dropped her cup. "It isn't proper for a wild animal to be near the food!"

Little Deer giggled and scooped Tiptoe into her arms.

Ellinor crossed her arms and walked away toward a small shed. She chose a large piece of salted pork from the meat kept cool inside the shed. Ellinor cut it into small pieces and added it to her kettle.

She began to place pork into the other pot, but Little Deer stopped her. She shook her head and said, "***Quahogs***." Immediately, Little Deer scooped up Tiptoe and ran down the hill toward the ocean.

Collecting *Quahogs*

Little Deer stopped at the stream that flowed near the village. Tiptoe popped out of her arms and began to explore the tall reeds that grew near the water.

The stream felt cool on Little Deer's feet. She hopped across the rocks with ease. Little Deer was searching for wild onions when she heard branches rustle.

The yellow-haired girl was standing by the stream. She motioned for Little Deer to come back to the village. Ignoring her, Little Deer continued pulling up onions and garlic.

The English girl stepped out onto a wet rock to walk over to Little Deer. She lost her balance and—*whoosh!*—she slipped into the water.

Little Deer giggled to see the yellow-haired girl completely soaked.

The yellow-haired girl stood up, looking angry, and squeezed the water out of her thick garments. She spoke harsh English words that Little Deer did not understand. Little Deer wondered why the girl wore so many layers of heavy clothing.

Little Deer stuffed the onions and garlic into her pouch and turned downstream toward the ocean. She could hear the English girl sloshing behind her.

The shoreline was rocky but it had a wide mudflat where *quahogs* could be found. Little Deer watched the mud for the small air holes that revealed where the clams hid.

The English girl stomped up next to her and stood with her hands on her hips.

Little Deer pulled three *quahogs* out of the mud and stuffed them into her netted bag. Daylight was fading, so Little Deer motioned for the girl to help.

The English girl got down on her knees and began searching for air holes in the mud. She quickly pulled out *quahogs* as if she had done it often. Then a wave snuck up behind them, knocking them both over into the water. Little Deer almost smiled at their dunking and thought the English girl did as well.

Just then, a musket shot rang out nearby.

Tiptoe jumped at the sound and ran down the beach and up a rocky cliff. Little Deer called his name, but the skunk just climbed higher.

Both girls ran toward the cliff. Little Deer scrambled up the rock, the netted bag full of clams bouncing on her back.

Tiptoe huddled in a hole near the top. Little Deer climbed, one foot at a time until she had almost reached him. Then the rock beneath her foot gave way and there was nothing to grab onto! She slid down the side of the cliff, rocks and dirt tumbling down with her. She fell hard into the water and disappeared from sight.

Two Kettles

Ellinor hesitated for a moment and then ran out to the edge of the water. "Little Deer! Take my apron!"

Little Deer felt the cold ocean water pulling her down to where it was quiet and dark. A blurry yellow object splashed onto the water above her. Little Deer reached for it and then felt herself being pulled slowly to the shore.

Ellinor tugged as hard as she could. Little Deer was heavier than she looked. Ellinor pulled harder.

Little Deer saw the rocks and struggled to pull herself up as pain shot through her arm.

"Are you badly injured?" Ellinor squatted next to her.

Little Deer did not understand her words. When she sat up, Tiptoe leaped into her arms. She looked up, and Ellinor smiled. The English girl had saved her life!

Ellinor pointed up the hill. "We should return." She held Little Deer's arm and gently helped her stand up.

Little Deer looked into the girl's blue eyes and clasped her hand. "El-li-nor." She squeezed it tight.

The yellow-haired girl smiled. "You're welcome, Little Deer."

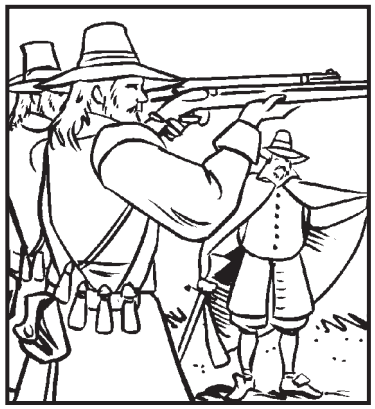
Little Deer turned back to the sea, sadly. "*Quahogs*," she muttered. "*Quahogs*."

"I'm sorry you lost them," Ellinor said. "But we still have the salted pork."

But even being bruised didn't change Little Deer's mind about doing things her way. Pointing ahead, she led Ellinor back up the stream to a grove of ash trees, where many late-growing blueberry bushes remained. Little Deer and Ellinor picked berries until the sun began to set.

That night, the girls finished the *Nasump*, or samp. They added blueberries to Little Deer's pot and the wild onion and garlic to Ellinor's. Each pot of corn porridge had a different taste, but both were praised as delicious.

Together, they served Governor Bradford and Massasoit at their tables inside the meetinghouse. By firelight, the girls ate and played games together, like Blind Man's Bluff and the ring-and-pin game.



BOOM! BOOM! BOOM! Little Deer and Ellinor watched together as Captain Standish led his men in shooting exercises. Ellinor looked over as a silent tear fell from Little Deer's cheek.

"Friends," Ellinor said, squeezing Little Deer's hand.

Little Deer nodded and smiled.

They knew the quiet peace between their people might not last for long. But they also knew that the seeds of their friendship would continue to grow.

Glossary

deerskin *(n.)* the skin of deer used for making most Wampanoag clothes (p. 7)

fowling *(v.)* hunting for birds such as geese, ducks, pigeons, and swans (p. 5)

hearth *(n.)* an outdoor or indoor fireplace used for cooking, light, and warmth (p. 12)

longhouse *(n.)* a Wampanoag meetinghouse built with cedar saplings and covered with bark (p. 7)

muskets *(n.)* long-barreled firearms used by the English (p. 4)

Nasump **(samp)** *(n.)* thick porridge made with ground corn and cooked with meat, fruit, or vegetables (p. 13)

pompions *(n.)* pumpkins (p. 4)

quahogs *(n.)* hard-shelled clams (p. 12)

samp *(n.)* (see *Nasump*) (p. 13)

sinew *(n.)* animal tendon (traditionally used as thread) (p. 7)

Name _____

INSTRUCTIONS: Read each statement and predict whether it is true or false, based on what you see in the illustrations. As you read, confirm or revise your prediction in the third column. If you confirmed your prediction, write the page number where you found the answer. If you need to revise the statement, change it to a true statement and write it in the box.

Statements	T or F	Revise or Confirm Your Prediction
1. The two girls were friends.		
2. Ellinor's father picked a pompion.		
3. English settlers captured Tisquantum and kept him prisoner.		
4. People and animals were alarmed to hear the muskets fired.		
5. Little Deer was worried as she wondered what the gunfire meant.		
6. Ellinor and Little Deer were happy to work together.		
7. Nasump was easy to make and didn't take long.		
8. The girls dug near small air holes in the mud to find where the clams were hiding.		
9. Ellinor slipped and fell into the water.		
10. Ellinor pushed Little Deer down the cliff.		
11. The skunk pulled Little Deer out of the water.		
12. The two girls became friends after their experience together.		

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Name _____

INSTRUCTIONS: As you read, list causes in the left column and their effects in the right column.

Topic: _____

Cause	Effect

TWO KETTLES • LEVEL V • 2

SKILL: CAUSE AND EFFECT

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Name _____

INSTRUCTIONS: Read the sentences below. In the blank on the right, tell whether they are complex or compound. Then circle the parts of the sentences and label them *subject, verb, phrase,* or *conjunction.*

Gems are beautiful, and they are valuable. compound

subject verb conjunction subject verb

1. Since she was old enough, Ellinor had to help the women prepare food for the feast. _____

2. He hoped not, but Yellow Feather and the English had agreed to help each other in times of war. _____

3. Once she had finished, she began to place pork into the other pot as well. _____

4. When they arrived, the English built a village on Wampanoag land without asking permission. _____

5. When she sat up, Tiptoe leaped into her arms. _____

6. She ran down to the stream with Tiptoe, where she would let the water wash away her worry. _____

7. His smile was like a large quahog shell, and Little Deer did not trust him. _____

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